No. 90-326 ①

Supreme Court, U.S.
FILED
AUG 21 1990
JOSEPH F. SPANIOL, JR.
CLERK

IN THE

Supreme Court of the United States

October Term, 1989

DATAPOINT CORPORATION,

Petitioner,

vs.

NORTHERN TELECOM, INC.,

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Jerry R. Selinger
Counsel of Record

500 Trammell Crow Center
2001 Ross Avenue
Dallas, Texas 75201-2916
214/220-8200

ATTORNEY FOR PETITIONER

OF COUNSEL:

Martha E. Waters
500 Trammell Crow Center
2001 Ross Avenue
Dallas, Texas 75201-2916
214/220-8200

86pp

QUESTIONS PRESENTED

This petition presents the following questions:

1. Does not the decision of the Federal Circuit conflict directly with the pronouncements of this Court in *Amadeo v. Zant*, 486 U.S. 214 (1988), as to the proper role of a court of appeals in applying Rule 52(a) to a trial court's critical assessment of witness credibility, when the lower court here heard "conflicting expert testimony" and expressly relied upon the "persuasive and credible" testimony of two such experts to hold the patent-in-suit invalid under 35 U.S.C. §112, but the appellate court relied upon alternative witnesses' testimony which the trial court had declined to credit to reverse that holding?

2. Does not the decision of the Federal Circuit, in reversing a holding that the patent-in-suit was "non-enabling" and thus invalid under 35 U.S.C. §112, violate this Court's admonition in *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1986), that even if validity is a question of law, subsidiary fact determinations of a district court are subject to Rule 52(a) and this Court's reminder in *Amadeo v. Zant*, 486 U.S. 214 (1988) about the interrelationship of witness credibility and the "clearly erroneous" standard of Rule 52(a), when the appellate court rejected the trial court's choice between conflicting oral testimony and instead relied upon testimony of witnesses not credited by the trial court?

3. Does not the Federal Circuit, in its *de novo* review of the question of enablement under 35 U.S.C. §112, violate the standards established in *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1986), by first refusing to accept the trial court's findings of fact regarding which witnesses were credible and then reversing because it believed "the great weight of testimony" — based on mere nose counting without allowance for credibility — was to the contrary.

TABLE OF CONTENTS

Page

Questions Presented i

Table of Contents ii

Table of Authorities iii

Rule 29.1 Statement iv

OPINIONS BELOW 2

JURISDICTION 2

STATUTES AND RULES INVOLVED 2

STATEMENT OF THE CASE 4

REASONS FOR GRANTING THE PETITION 9

The Trial Court's Critical Fact Findings Regarding Witness Credibility Were Based On Competent Evidence And The Federal Circuit Should Not Have Ignored Those Findings 9

CONCLUSION 11

Appendix

Court of Appeals Decision 1a

Denial of Rehearing 28a

Trial Court Opinion 30a

TABLE OF AUTHORITIES

Cases: Page

Amadeo v. Zant, 486 U.S. 214, 108 S. Ct. 1771 (1988) 10, 11

Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986) ... 9, 10

Spectra-Physics Inc. v. Coherent, Inc., 827 F.2d 1524 (Fed. Cir.), *cert. denied*, 484 U.S. 953 (1987) 10

W. L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, *cert. denied*, 469 U.S. 851 (1984) 10

Statutes:

35 U.S.C. §112 .... 4, 10

Rules and Regulations:

FED. R. CIV. P. 52(a) 9, 10

37 C.F.R. § 1.60 4

RULE 29.1 STATEMENT

Petitioner Datapoint Corporation has no parent companies or subsidiaries apart from wholly-owned subsidiaries or affiliates, except for Federal Integrated Systems Corp., a Nevada corporation.

NO. ______________

In The

Supreme Court of the United States

DATAPOINT CORPORATION,

Petitioner,

vs.

NORTHERN TELECOM, INC.,

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Petitioner respectfully prays that a writ of certiorari issue to review the judgment of the United States Court of Appeals for the Federal Circuit in its Cause Nos. 89-1034,-1035 insofar as the judgment reversed the trial court's holding that claims 1-23 and 29-46 of United States Patent No. 3,760,375 were invalid because of failure to comply with the statutory "enablement" requirement of 35 U.S.C. §112. The judgment was entered on June 29, 1990, as a result of which seven claims were found to be valid and infringed. Rehearing was denied on August 2, 1990.

OPINIONS BELOW

The opinion of the Court of Appeals has been reported at ____ F.2d ___, 15 U.S.P.Q.2d 1321 and is reprinted in the appendix to this petition commencing at page 1a. The Order denying rehearing is reprinted in the appendix to this petition commencing at page 28a. The District Court opinion has been reported at 9 U.S.P.Q.2d 1577 and is reprinted in the appendix to this petition commencing at page 30a. (The pertinent portions for purposes hereof are to be found at pages 15a - 19a, 67a - 69a of the appendix, in this volume.)

JURISDICTION

The judgment which Petitioner seeks to have reviewed by this Court was entered on June 29, 1990. A petition for rehearing was denied on August 2, 1990. Jurisdiction was conferred on the District Court by 28 U.S.C. §1338. Jurisdiction was conferred on the Federal Circuit by 28 U.S.C. §1295. This Court has jurisdiction to review the judgment of the Court of Appeals under 28 U.S.C. §1254(1).

STATUTES AND RULES INVOLVED

35 U.S.C. §112

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
>
> A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.
>
> Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by

reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thererof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Federal Rules of Civil Procedure

Rule 52(a)

(a) **Effect.** In all actions tried upon the facts without a jury or with an advisory jury, the court shall find the facts specially and state separately its conclusions of law thereon, and judgment shall be entered pursuant to Rule 58; and in granting or refusing interlocutory injunctions the court shall similarly set forth the findings of fact and conclusions of law which constitute the grounds of its action. Requests for findings are not necessary for purposes of review. Findings of fact, whether based on oral or documentary evidence, shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of the witnesses. The findings of a master, to the extent that the court adopts them, shall be considered as the findings of the court. It will be sufficient if the findings of fact and conclusions of law are stated orally and recorded in open court following the close of the evidence or appear in an opinion or memorandum of decision filed by the court. Findings of fact and conclusions of law are unnecessary on decisions of motions under Rule 12 or 56 or any other motion except as provided in Rule 41(b).

STATEMENT OF THE CASE

This suit for infringement of the forty-six claims of United States Patent No. 3,760,375 (the "'375 Patent") was filed in 1982 against petitioner, Datapoint Corporation ("Datapoint"), in the United States District Court for the Northern District of Texas, Dallas Division. Datapoint denied infringement and asserted that the '375 Patent was invalid and unenforceable. Trial to the District Court on the issues of liability[1] consumed seventy days, during which time the judge not only heard what the witnesses said, but watched their manner of testifying and the reasons given for their testimony. After trial, the District Court issued a 218-page opinion. Based upon that opinion, the court entered judgment holding all claims invalid and unenforceable.

The trial judge made underlying factual findings to explain why the '375 Patent was invalid for, *inter alia*, failure to comply with the "enablement" requirement of 35 U.S.C. §112.[2] These factual underpinnings were based on critical credibility determinations by the trial judge, who was presented with conflicting expert testimony. 9 U.S.P.Q.2d at 1597, 69a.

Credible Witnesses Persuasively Explained Why Undue Experimentation Was Required

By way of background, the '375 Patent is for a "source data entry terminal" — a limited purpose computer specifically programmed in a certain way for data entry. As depicted in Figure 2 of the '375 Patent, the terminal included a keyboard 12, a CRT display 14, at least one cassette recorder 16, a "fixed-program microprocessor" 32[3] and a data buffer 34.

---

[1] The District Court bifurcated liability and damages on January 25, 1984.

[2] "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same . . . ."

[3] The '375 Patent issued on September 18, 1973 from a 1971 continuation application of a parent application filed on June 13, 1969. *See generally* 37 C.F.R. § 1.60. In June, 1969, the term "microprocessor" merely referred to a small processor. The seminal Intel microprocessor chip was not announced until the early 1970's, some years after the parent application was filed.

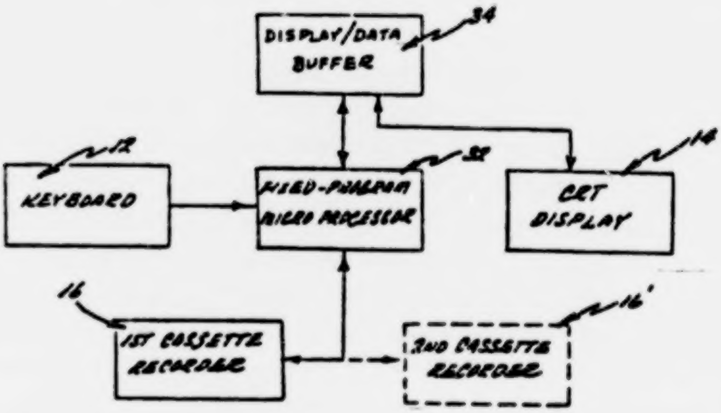
DISPLAY/DATA BUFFER
34
KEYBOARD
12
FIXED-PROGRAM MICRO PROCESSOR
32
CRT DISPLAY
14
16
1ST CASSETTE RECORDER
2ND CASSETTE RECORDER
16'

FIG. 2.

According to the '375 Patent, the microprocessor included a wired read-only memory ("ROM") 38 of very limited size. The patent also explained that the ROM contained "an appropriate" instruction set[4] for time-sharing while the microprocessor had a "fixed program."[5] Critically, however, it was uncontroverted that the '375 Patent did not set forth any technical details about either the instruction set or the fixed program.

During the seventy-day trial, the District Court learned about the complicated interrelationship between the instruction set and the fixed program. According to the '375 Patent, the fixed program in the microprocessor was required to perform the functions of programmed or free-form data entry, verification, correction, recording, search, edit and display. The trial court understood that in 1969 it was a most complicated endeavor to create an instruction set *from scratch* and then use it to implement those functions.[6] The trial court reached this understanding through the testimony of Dr. Kay Magleby and Professor Wesley Clark. Those two witnesses also presented testimony about the factual underpinnings of program non-enablement, which the lower court found to be "persuasive and credible" testimony.

---

[4] An instruction set is the machine level functions that are to be part of the basic repertoire of the computer.

[5] Although the Federal Circuit believed the claimed invention "is not in the details of the program writing," 15 U.S.P.Q.2d at 1329, 16a, "fixed program" was explicitly recited as an element of many of the claims and undoubtedly is required in order to use the patented invention. Moreover, infringement was found only when Datapoint hardware was used with specific Datapoint computer programs.

[6] This is unlike modern-day computers which come with an operating system.

For example, Professor Clark noted that the '375 Patent did not present an instruction set, nor did it cure this deficiency by disclosing other information such as flow charts, block diagrams, source code listings or anything else related to a program. Professor Clark opined, however, that such disclosure was required in 1969 for one reasonably skilled in the art "to avoid spending a great deal of experimental time."[7] Professor Clark also noted that the '375 Patent was deficient in its failure to provide any details regarding a "format program." Although the term "format program" is mentioned many times in the '375 Patent, he pointed out that it is never defined. Dr. Magleby concurred and explained that the term "format program" did not actually relate to a program but instead constituted an unspecified method of defining "what the format is." He could not tell from the '375 Patent what a typical "program format"[8] might be, "what kinds of instructions or symbols are going to be used to specify how it's to operate, what are the range or limits that it can — under which it can work?"

The District Court Properly Credited the Clark and Magleby Testimony

Simply stated, Professor Clark and Dr. Magleby provided testimony — deemed "persuasive and credible" by the District Court — that the '375 Patent lacked sufficient information to enable a skilled programmer to create, without undue experimentation, programs for the terminal to perform the noted functions and be used by a non-technical operator. There was some testimony to the contrary, but the District Court (unlike the Federal Circuit) declined to credit it.

---

[7] He gave specific reasons for this testimony: since the '375 Patent did not define the instruction set, a programmer would need to go through a "difficult" set of iterative tasks, starting from scratch. The programmer would first need to design an instruction set appropriate for a device which had a memory of the very limited size described in the '375 Patent. The programmer would then write a program based on the assumed instruction set and see if the program caused the machine to function in the vague way defined in the '375 Patent.

[8] A "program format" is an explicit element of three of the claims found infringed.

The District Court explained that it had considered the "conflicting expert testimony" regarding whether one skilled in the art would be able (without undue experimentation) to write the programs needed to practice the invention of the '375 Patent. 9 U.S.P.Q.2d at 1597, 69a. The trial court chose "from among the testimony presented" and found "to be persuasive and credible" the testimony of Professor Clark and Dr. Magleby. *Id.* Judge Fitzwater explained that their testimony established that the "specification's lack of any information concerning the invention's programs would require a person reasonably skilled in the art of computer programming to experiment unduly in attempting to write programs for the '375 device." *Id.*[9]

The Fact Finding Efforts By the Court of Appeals Are Violative of Fed. R. Civ. P. 52 As Well As Wrong

The Federal Circuit, in its zeal to reverse the finding of invalidity, failed to give due regard to the District Court's decision to credit the testimony of Dr. Magleby and Professor Clark over the testimony of other witnesses. Instead, with nothing but a sterile transcript, the appellate court unjustifiably relied upon the testimony of alternative witnesses to rationalize reversal of the invalidity holding. The Federal Circuit thus sought to second-guess the trial court's determination that Professor Clark and Dr. Magleby presented credible testimony. In its efforts to support reversal, the Federal Circuit necessarily ignored Professor Clark's explanation about why creation of the requisite computer program was not routine and would require a

---

[9] The trial court gave several examples to show why it credited the testimony of Dr. Magleby and Professor Clark. For instance, Dr. Magleby explained that "he could not discern *where* the program format would be loaded, what would be a typical program format, what characters would be used, or what would be the range or limitations of the format program." 9 U.S.P.Q.2d at 1597, 69a (emphasis added). The trier of fact also credited Professor Clark's testimony that the '375 Patent did "not set out either the '375 machine's job or the needed instruction set." *Id.* Likewise, Judge Fitzwater cited Dr. Magleby's testimony that the specification's "general lack of information would cause one skilled in the computer programming art and attempting to build a '375 machine to experiment unduly." *Id.*

"great deal of experimental time."[10] Furthermore, it sought to impugn Dr. Magleby's credibility.[11] 15 U.S.P.Q.2d at 1329-30, 17a - 18a.

Concomitantly, the Federal Circuit pointed to the testimony of three witnesses (Gordon Bell, Earle Pughe and Fernando Corbato), who the trial court did not here deem credible, to reverse the holding of non-enablement. 15 U.S.P.Q.2d at 1329, 16a - 17a. In fact, Mr. Bell testified at trial that an ordinary programmer operating under the "intense memory constraint" of the '375 Patent would have trouble with the tricky programs, such as editing, that were essential to the '375 Patent. The Federal Circuit ignored this testimony, however, and instead used his prior inconsistent deposition testimony. At trial, Mr. Bell agreed that he had changed his testimony since his deposition. He explained that he had changed his position because he had not considered the memory constraints of the patent during his deposition. The trial court had the opportunity to see and hear Mr. Bell and reached a conclusion consistent with his trial testimony, while the appellate court openly engaged in unwarranted fact finding in its reliance on the deposition testimony. Similarly, the reviewing court cited snippets of testimony from Mr. Pughe and Professor Corbato. In so doing, the Federal Circuit brazenly ignored the District Court's credibility determinations — a clearly impermissible usurpation of the trial court's role — to support the appellate court's predisposition to uphold the validity of the '375 Patent.[12]

---

[10] Professor Clark testified that regardless of how the computer was designed, a skilled programmer would need to know what the instruction set was to program it without undue experimentation.

[11] The Federal Circuit cited his testimony that he could not determine where the format program was "loaded" and pointed to his agreement that the '375 Patent describes where the program format is stored and how it is entered into the delay line. It thus confused loading and storing, a mistake not made below and which formed no basis to reject the lower court's finding of credibility.

[12] The Federal Circuit also misunderstood what Mr. Pughe actually said. Mr. Pughe stated that he could at some *undefined* time have built a fixed-program ROM with an *unspecified* source data entry program. This is hardly a basis for enablement, as the District Court obviously recognized.

Having wrongfully substituted its own judgment on witness credibility, the appellate court then counted noses to conclude that "[t]he great weight of the expert testimony on both sides was that a programmer of reasonable skill could write a satisfactory program with ordinary effort." 15 U.S.P.Q.2d at 1330, 18a. Datapoint sought rehearing, also suggesting rehearing in banc. The petition for rehearing was denied on August 2, 1990.

REASONS FOR GRANTING THE PETITION

The Trial Court's Critical Fact Findings Regarding Witness Credibility Were Based On Competent Evidence, And The Federal Circuit Should Not Have Ignored Those Findings

The Court should issue the writ of certiorari in this case because the Federal Circuit's reversal of the trial court is grounded upon a total disregard of the requirements of Rule 52(a) and is catastrophically unjust. The appellate court substituted its view of factual issues based upon dry transcript and ignored the crucial findings of credibility. Moreover, despite the Federal Circuit's well-recognized predilection for appellate fact finding,[13] this Court has not previously considered a Federal Circuit opinion to assess that appellate court's role in reviewing findings permeated with determinations of credibility.

In *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1986), the Court summarily granted a petition for certiorari and reversed the Federal Circuit for ignoring Rule 52(a). The *Dennison* Court did not consider whether the Federal Circuit's opinion comported with Rule

---

[13] In 1987 alone, the BNA's *Patent, Trademark & Copyright Journal* ran five stories about certiorari petitions seeking redress from Federal Circuit fact-finding. *See* Pat. Trademark & Copyright J. (BNA), Vol. 33, pg. 125, reporting *Stora Kopparbergs Bergslags A. B. v. Crucible, Inc.*, 793 F.2d 1565, *cert. denied*, 107 S.Ct. 882 (1987); Pat. Trademark & Copyright J. (BNA), Vol. 32, pg. 478, reporting *Monoclonal Antibodies, Inc. v. Hybirtech, Inc.*, 802 F.2d 1367, *cert. denied* 107 S.Ct. 1606 (1987); Pat. Trademark & Copyright J. (BNA), Vol. 31, pg. 545, reporting *Dennison Mfg. Co. v. Panduit Corp.*, 810 F.2d 1561, *cert. denied*, 107 S.Ct. 2187 (1987); Pat. Trademark & Copyright J. (BNA), Vol. 34, pg. 593, reporting *Barnes-Hind/Hydrocurve, Inc. v. Bausch & Lomb. Inc.* 796 F.2d 443, *cert. denied*, 108 S.Ct. 85 (1987); Pat. Trademark & Copyright J. (BNA), Vol. 34, pg. 593, reporting *Verdegaal Bros. Inc. v. Union Oil Co. of California*, 814 F.2d 628, *cert. denied*, 108 S.Ct. 95 (1987).

52(a) because of the absence of any meaningful appellate analysis. 475 U.S. at 811. Nevertheless, in the course of its summary treatment, the Court emphasized that subsidiary determinations of the district court in appellate review of a legal conclusion of obviousness under 35 U.S.C. §103 are subject to Rule 52(a). 475 U.S. at 810. "Enablement" under 35 U.S.C. §112 unquestionably presents the same interrelationship between fact and law as "obviousness" under 35 U.S.C. §103,[14] which was at issue in *Dennison. See, e.g., Spectra-Physics Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir.), *cert. denied* 484 U.S. 953 (1987). Thus, although conclusions under Section 112 may be ones of law, the Federal Circuit has no more right to ignore subsidiary factual findings than this Court was willing to permit in *Dennison.*

In *W. L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, *cert. denied*, 469 U.S. 851 (1984), the Federal Circuit noted that a patent "is invalid only when those skilled in the art are required to engage in *undue* experimentation to practice the invention. There was no evidence and the Court made no finding that undue experimentation was required." 721 F.2d at 1557 (Emphasis in original; citation omitted). By contrast, the District Court here identified the evidence that it found to be credible and specifically found that undue experimentation would be required. 9 U.S.P.Q.2d at 1597, 69a. The appellate court ignored the evidence the trial court deemed credible and instead selected alternative testimony, without rational basis, to reverse the invalidity holding. This appellate fact finding is prejudicial to Datapoint. It also is unfair to the District Court which so painstakingly laid out in detail the credibility factors which were crucial to its ultimate holdings.

In improperly making findings of fact, the Federal Circuit not only disregarded this Court's instruction in *Dennison*, but also ignored the recent decision of this Court in *Amadeo v. Zant*, 486 U.S. 214 , 108 S.Ct. 1771 (1988). In the *Amadeo* case, Justice Marshall, writing for a unanimous Supreme Court, reiterated what the Court frequently has emphasized: "[w]here there are two permissible views of the evidence, the fact finder's choice between them *cannot be clearly erroneous*." 486 U.S. at ___, 108 S. Ct. at 1778. (Citations omitted; emphasis added.) The Court also stressed the special deference to be accorded on appeal to determinations by the fact finder regarding the credibility of witnesses. 486 U.S. at ___, 108 S. Ct. at 1779. With this background, it reversed the appellate court for engaging in impermissible fact finding.

---

[14] The Federal Circuit has held that enablement is a question of law. *Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co.*, 730 F.2d 1452 (Fed. Cir. 1984). Several pre-1982 decisions had held to the contrary. *See, e.g., Locklin v. Switzer Bros., Inc.*, 299 F.2d 160, 166 (9th Cir. 1961), *cert. denied*, 369 U.S. 861 (1962).

Despite such clear instruction, in the case at bar the Federal Circuit redefined credibility (without any basis) to reverse the holding of nonenablement. The reversal by the Federal Circuit constitutes impermissible appellate fact finding, which contravenes the precepts of this Court and the Federal Rules of Civil Procedure.

CONCLUSION

The decision of the Federal Circuit reversing the holding of invalidity because of nonenablement would impose a gross injustice upon Datapoint, and Datapoint accordingly prays that the writ of certiorari be issued.

Respectfully submitted,

Jerry R. Selinger
Counsel of Record

2001 Ross Avenue
500 Trammell Crow Center
Dallas, Texas 75201-2916
(214) 220-8200

ATTORNEY FOR PETITIONER

OF COUNSEL:

Martha E. Waters
2001 Ross Avenue
500 Trammell Crow Center
Dallas, Texas 75201
214/220-8200

CERTIFICATE OF SERVICE

I certify that three copies of the foregoing Petition for Writ of Certiorari were served upon counsel of record for Northern Telecom, Inc. this ____ day of August, 1990.

____

APPENDIX

United States Court of Appeals for the Federal Circuit

89-1034, -1035

NORTHERN TELECOM, INC.,

Plaintiff-Appellant,

v.

DATAPOINT CORPORATION,

Defendant/Cross-Appellant.

DECIDED: June 29, 1990

Before MARKEY, * NEWMAN and ARCHER, *Circuit Judges.*
PER CURIAM.

Northern Telecom, Inc., successor-in-interest to Sycor, Inc. (together herein "Sycor"), appeals the decision of the United States District Court for the Northern District of Texas. *Northern Telecom, Inc. v. Datapoint Corp.*, No. CA3-82-1039-D (N.D. Tex. Aug. 31, 1988). Datapoint Corporation has filed a cross-appeal. At issue are the validity and enforceability of United States Patent No. 3,760,375 ("the '375 patent"), and infringement by Datapoint.

We affirm the district court's holding that certain claims had not been proved invalid under 35 U.S.C. §§ 102 and 103, that certain claims are infringed, and that certain claims are invalid for failure to comply with the best mode requirement of 35 U.S.C. § 112. We reverse the district court's holdings of invalidity for failure to comply with the enablement requirement of 35 U.S.C. § 112. We reverse the equitable determination of unenforceability based on inequitable conduct.

---

* Circuit Judge Markey vacated the position of Chief Judge on June 27, 1990.

The Invention

The '375 patent, entitled "Source Data Entry Terminal", inventors Samuel N. Irwin and Michael R. Levine, relates to a mode of "batch-processing" of data. In batch processing, data are entered by the operator and stored, off-line,[1] the operator not interacting with the computer but simply with the batch data entry device.

Batch data preparation and entry were not new. Systems in common use at the time this invention was made included the IBM punch card, the paper tape punch, and the key-to-magnetic tape recorder. The invention of the '375 patent, a programmable processor-based batch data entry terminal, provided an improved way of entering, verifying, and storing data. Entry and verification of data at the source by persons who understand the data removes a source of error in data processing. The inventors built a major business on the invention of the '375 patent.

In accordance with the '375 invention, the data are keyed into a form that is displayed on the screen; the operator is guided by names and instructions on the screen; and certain entries are subject to automatic as well as visual checks and edits. A storage area, or buffer, holds the data as it is entered and, when the buffer holds a complete and correct record, the data are transferred to a magnetic tape cassette.

Sycor filed suit charging Datapoint with infringement of the '375 patent. Datapoint raised numerous defenses and counterclaims. The cause was vigorously litigated, the trial taking seventy days over a six-month period. The district court issued extensive findings of fact and conclusions of law, in a 219 page opinion. Each side appeals certain of the issues that were decided adversely to it.

---

[1] "Off-line" means not actively connected to the computer, in contrast to "on-line", wherein the terminal is connected by a comunication link so that signals are transmitted directly between the terminal and the computer.

I

Obviousness - 35 U.S.C. § 103

Datapoint appeals the district court's determination that Datapoint did not prove by clear and convincing evidence facts requiring a holding that claims 35-37, 40-42, and 44 are invalid under § 103. Datapoint also raises the issue of invalidity under § 103 of claims 19, 20, and 25-28.

Datapoint relies as prior art on the Lincoln Laboratory Instrument Computer (LINC), developed in 1962 by expert witness Professor Clark, running the Patient Interview program, written by a Dr. Slack. The LINC is described as a stored program computer designed for laboratory use, consisting of a keyboard for data entry and commands to the computer, an electronics cabinet, an oscilloscope information display, and reel-to-reel digital magnetic tape units for storing data and programs.

Claims 40-42 and 44

Claim 40 is as follows:

> 40. A method of implementing a source data entry terminal device, comprising the steps:
>
> connecting selected input/output peripheral components including at least a keyboard data entry means and a visual data display means to a buffer memory and to a central processor organization, and using said buffer memory for temporary storage of data entered by said keyboard means;
>
> incorporating control logic for all such peripheral components in the central processor and controlling each such component by the central processor, such that said peripheral components need have substantially no local control logic of their own;
>
> and dedicating the terminal to a given operational configuration by incorporating a fixed program in said central processor.

Claims 41, 42, and 44 are dependent upon claim 40, and contain additional limitations.

The district court found that the final step of claim 40, requiring a fixed program, differed from the LINC because the LINC did not employ a fixed program. Datapoint contends on this appeal, as it did at trial, that this difference is a "routine design choice".

Sycor does not dispute that fixed programs are not new: inventor Irwin, in his testimony, gave the example of a calculator. Sycor describes the invention of the '375 patent as a new combination of known steps and elements, that provides a new and commercially successful solution to the problems of batch data entry. Sycor states that this combination was not taught or suggested by the prior art, including the LINC and the LINC as modified by the Patient Interview program.

It is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985) (insufficient to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor); *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1546, 221 USPQ 1, 7 (Fed. Cir. 1984) ("As this court has held, 'a combination may be patentable whether it be composed of elements all new, partly new or all old'") (citations omitted); *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 220 USPQ 303, 312 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (individual references can not be "employed as a mosaic to recreate a facsimile of the claimed invention.") The district court found that the technology for the invention claimed in the '375 patent existed at the time the invention was made, but correctly declined to engage in hindsight reconstruction of the claimed invention.

Datapoint argues that the differences between the LINC and the '375 invention are "trivial". The district court observed that the prior art failed to teach the combination and its use as set forth in the '375 patent, and stated that the invention's "commercial success, although not determinative of the issue, is some indication that the '375 patent was not [sic: invention would not have been] obvious", the court referring to *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966).

The prior art does not suggest the Irwin/Levine solution of the '375 invention to the batch data entry problem. As discussed in *In re Rothermel*, 276 F.2d 393, 397, 125 USPQ 328, 332 (CCPA 1960), the nature of the problem "which persisted in the art", and the inventor's solution, are factors to be considered in determining whether the invention would have been obvious to a person of ordinary skill in that art. *See also, e.g., Fromson v. Advance Offset Plate. Inc.*, 755 F.2d 1549, 1556, 225 USPQ 26, 31 (Fed. Cir. 1985) (the prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination). Whether the changes from the prior art are "minor", as Datapoint argues, the changes must be evaluated in terms of the whole invention, including whether the prior art provides any teaching or suggestion to one of ordinary skill in the art to make the changes that would produce the patentee's method and device. *Lindemann Maschinen-fabrik GmbH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

We affirm the district court's holding that claims 40-42 and 44 had not been proved invalid on the grounds raised.

Claims 35-37

Claims 35-37 are dependent on claims 29 and 30, and include their limitations, as follows:

29. A method of source data capture, comprising the steps:

generating coded signals representative of alphanumeric source data desired to be captured;

visually displaying the data of which said signals are representative by use of such signals;

using a buffer memory to temporarily store the data being displayed;

and recording the data on magnetic tape after the data has been visually displayed.

30. The method of claim 29, including the step of using a program format to generate said data-representative signals in a predetermined relative sequence, and visually displaying said data in such sequence.

35. The method of claim 30, wherein said format is used by recording it on magnetic tape and reproducing the record format prior to actual use.

36. The method of claim 35, wherein said format is recorded on magnetic tape enclosed within cassette tape cartridges, of the basic type conventionally used for audio recording.

37. The method of claim 35, wherein the format recorded on said tape is loaded into a buffer memory by replaying the tape, and the format is held in such buffer during data entry.

Datapoint asserts that claims 35-37 do not differ from the LINC with the Patient Interview program, except in trivial detail. The district court analyzed these differences. As to claim 35, the court found: "The evidence is insufficient in addressing whether the program format of the [Patient Interview] program was held in a buffer memory. The court would have to draw unwarranted inferences from the evidence to conclude otherwise."

While invalidity is a question of law, the party asserting invalidity must by clear and convincing evidence establish facts supporting a conclusion of invalidity, and asserted inferences of fact must similarly be supported to meet this standard. Datapoint has not shown that the district court clearly erred in refusing to draw such inferences.

As to claim 36, Datapoint argues that Sycor's choice of cassette tapes to record data as opposed to the reel-to-reel system used in the LINC was "an obvious design choice." Sycor states that the use of cassette tapes in the '375 invention was a significant aspect of the '375 invention as a whole, and there was extensive evidence supporting this position. Datapoint does not show that the prior art suggests the Sycor combination. *Rosemount*, 727 F.2d at 1546, 221 USPQ at 7.

Datapoint has not by clear and convincing evidence established facts requiring the conclusion that the subject matter of claims 35-37 would have been obvious in terms of § 103. The holding of the district court in respect of claims 35-37 is affirmed.

Claims 19, 20, 25-28

The parties dispute whether Datapoint adequately raised the issue of the validity of claims 19, 20, and 25-28, based on the LINC as prior art. In view of our holding that these claims are invalid on other grounds, see Part V, *infra*, we do not consider this issue.

II

Anticipation - 35 U.S.C. § 102(b)

Datapoint challenges the district court's finding that claims 40-42 and 44 were not anticipated by certain "AESOP-B" documents because these documents were not "printed publications" in terms of 35 U.S.C. § 102(b)[2]. Whether a document is a "printed publication" is "a legal determination based on underlying fact issues". *In re Hall*, 781 F.2d 897, 899, 228 USPQ 453, 455 (Fed. Cir. 1986).

The AESOP-B was a complex military system for on-line distributed computer processing of logistical data such as the positions of aircraft. The documents in question are four reports on aspects of this system, identified as exhibits DX-2 through DX-5. The reports DX-2 through DX-5 were not under security classification, and were distributed to approximately fifty persons or organizations involved in the AESOP-B project. Document DX-5 contained the legend "Reproduction or further dissemination is not authorized . . . not for public release." The district court found that documents DX-2 through DX-4 "may have" contained such notices, the court finding that they "were of the class of documents that would have been distributed with such a notice." The documents were housed in a library at the Mitre Corporation, the company having principal responsibility for developing AESOP-B. Access to the library was restricted to persons authorized by Mitre.

A document, to serve as a "printed publication", must be generally available. *Garrett Corp. v. United States*, 422 F.2d 874, 878, 164 USPQ 521, 524 (Ct. Cl. 1970) ("While distribution to government agencies and personnel alone may not constitute publication . . . distribution to commercial companies without restriction on use clearly does.") *See Massachusetts Institute of Technology v. AB Fortia*, 774 F.2d 1104, 1109, 227 USPQ 428, 432 (Fed. Cir. 1985) (paper orally presented at a scientific meeting open to all persons interested in the subject matter, with written copies distributed without restriction to all who requested it, is a printed publication); *In re Wyer*, 655 F.2d 221, 226-27, 210 USPQ 790, 795 (CCPA 1981) (foreign patent applications that are made known to and are available to the public without restriction are publications).

The district court, referring to "the uncertainties of public access to the AES0P-B documents", found that Datapoint had failed to prove by clear and convincing evidence facts requiring a conclusion that these documents were "sufficient as prior publications, descriptive of the AESOP-B". The district court was unable to find that anyone could have had access to the documents by the exercise of reasonable diligence. *See Massachusetts Inst., supra.* We are unpersuaded that the evidence shows otherwise. Accordingly, we affirm that these documents were not printed publications.

---

[2] 35 U.S.C. § 102: A person shall be entitled to a patent unless

(b) the invention was patented or described in a printed publication . . . more than one year prior to the date of the application for patent in the United States.

Because the documents were not as a matter of law printed publications, we do not reach the issue of whether the AESOP-B system disclosed all the limitations of claim 29, on which claims 35-37 depend.

The district court's holding that claims 40-42 and 44 were not shown to be invalid under § 102(b) is affirmed.

III

Inequitable Conduct - The Rule 312 Amendment

The district court held all the claims of the '375 patent unenforceable based on inequitable conduct before the Patent and Trademark Office ("PTO"). On appellate review we apply the abuse of discretion standard. *Kingsdown Medical Consultants. Ltd. v. Hollister. Inc.*, 863 F.2d 867, 876, 9 USPQ2d 1384, 1392 (Fed. Cir. 1988) (in banc clarification of precedent). Abuse of discretion may obtain when the ruling reflects an erroneous application or interpretation of law, or shows a clear error of judgment, or is based on clearly erroneous factual findings. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1245-46, 9 USPQ2d 1913, 1928 (Fed. Cir. 1989); *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 756 F.2d 1574, 1581, 225 USPQ 357, 363 (Fed. Cir. 1985).

A

The basis for the district court's ruling of inequitable conduct was the filing of an "Amendment Under Rule 312" during prosecution of the patent application that led to the '375 patent.

During prosecution the examiner had objected to the application on various grounds, but eventually allowed the claims substantially as filed. After the PTO issued the notice of allowance, but before payment of the issue fee, Sycor requested amendment of the descriptive text of the patent application as authorized by PTO Rule 312, 37

C.F.R. § 1.312 (1969), which provided as follows:

> **§ 1.312.** Amendments after the notice of allowance of an application will not be permitted as a matter of right. However, such amendments may be made if filed not later than the date the issue fee is paid, on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

Sycor filed a four-page amendment under Rule 312, containing twenty-five specific changes to the specification. In explanation Sycor's patent attorney wrote:

> The present amendment under Rule 312 is primarily for the purpose of correcting certain typographical errors and other such discrepancies noted in the specification upon a final review of the same, immediately prior to payment of the issue fee.
>
> The errors and discrepancies sought to be corrected by this amendment were not noticed previously, and thus could not have been corrected before the present time; because the corrections merely add to the clarity and readability of the specifications [sic], entry of the amendment is believed to be in order and is solicited.

The district court held that five of the requested changes altered the scope of the original disclosure and the scope of the previously allowed claims. These five changes, as listed by the district court with the changes to the text underlined, were as follows:

(1) a wired *or like* read-only memory;

(2) read-only memory containing a hardwired *or other wise fixed* program;

(3) a hardwired *or fixed* program;

(4) a wired *or like* ROM *of the form just mentioned* is unalterable;

(5) the wired-in (*or otherwise fixed*) program in the ROM.

The examiner had written "Entry Recommended" in the margin of the Rule 312 amendment, alongside the first two changes listed above. On the official PTO form the box was checked "entered as directed to matters of form not affecting the scope of the invention."

The district court found that the attorney intentionally misrepresented the purpose and nature of these amendments, and that this misrepresentation was material to patentability.

B

Sycor argues that the amendments simply conformed the descriptive text of the specification to the claims, as required by the rules of PTO practice, and thus could not, as a matter of law, broaden the disclosure and the scope of the claims. Sycor states that such concordance is routine, and indeed can be compelled by the examiner. Sycor argues that neither intent to deceive nor materiality has been shown, and that the examiner correctly entered the amendments.

The original claims as filed are part of the patent specification. 35 U.S.C. § 112, ¶ 2; *In re Benno*, 768 F.2d 1340, 1346, 226 USPQ 683, 686-87 (Fed. Cir. 1985). At the time the Rule 312 amendment was filed the claims had already been examined and allowed substantially as filed, and the subject matter added to the descriptive text by amendment was already in the allowed claims. The Manual of Patent Examining Procedure ("MPEP") § 608.01(1) (3d ed., rev. June 1968) states:

> § 608.01(1) In establishing a disclosure, applicant may rely not only on the description and drawing as filed but also on the original claims if their content justifies it.
>
> Where subject matter not shown in the drawing or described in the description is claimed in the case as filed, and such original claim itself constitutes a clear disclosure of this subject matter, then the claim should be treated on its merits, and *requirements made to amend* the drawing and description to show this subject matter. [emphasis added]

Although Datapoint's witnesses testified that the changes enlarged the scope of the claims, the claims as originally filed and as allowed were already of the challenged scope, and were already part of the disclosure. *Benno, supra. See Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 699, 218 USPQ 865, 871 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984) (the scope of the patent is determined by the claims).

The district court described the MPEP as requiring a "heightened showing" for entry of Rule 312 amendments which affect the disclosure, citing MPEP § 714.16, which states:

> **§ 714.16.** As to amendments affecting the disclosure, the scope of any claim, or that add a claim, the remarks accompanying the amendment must fully and clearly state the reasons on which reliance is placed to show: (1) why the amendment is needed; (2) why the proposed amended or new claims require no additional research or examination; (3) why the claims are patentable and, (4) why they were not earlier presented.

The district court held that Sycor did not make the requisite statement of "reasons". The issue, however, is intent to deceive or mislead.

These amendments were not to the claims. The nature of these amendments was clear on their face, and the examiner was required to review them to determine whether they complied with law and practice. All the pertinent information was squarely before the examiner in a simple document. As stated in *Akzo N.V. v. United States Int'l Trade Comm'n,* 808 F.2d 1471, 1482, 1 USPQ2d 1241, 1247 (Fed. Cir. 1986), *cert. denied,* 482 U.S. 909 (1987), "the examiner was free to reach his own conclusion . . . ."

Although lapse on the part of an examiner does not exculpate an applicant whose acts are intentionally deceptive, *KangaROOS U.S.A. v. Caldor, Inc.*, 778 F.2d 1571, 1576, 228 USPQ 32, 35 (Fed. Cir. 1985), any doubt as to whether the examiner lapsed in his duty does not increase the burden on the applicant. Nor does the applicant's obligation of candor replace the examiner's duty to examine the claims. *Kingsdown*, 863 F.2d at 874 n.8, 9 USPQ2d at 1390 n.8.

Entry of a Rule 312 amendment requires both the recommendation of the primary examiner and approval by the Commissioner. 37 C.F.R. § 1.312, *supra.* The record shows that entry of these amendments was expressly approved. We do not think the attorney's words "typographical errors and other such discrepancies" in the introductory paragraphs of the amendment must be deemed to have diverted the examiner from mandatory review of the ensuing subject matter, in view particularly of the examiner's specific recommendation that the amendment be entered. It is presumed that public officials do their assigned jobs. *American Hoist & Derrick Co. v.*

Sowa & Sons. Inc., 725 F.2d 1350, 1359, 220 USPQ 763, 770 (Fed. Cir.), *cert. denied*, 469 U.S. 821 (1984).

The subjective nature of the factual determination of intent to deceive, which is the predicate to a holding of inequitable conduct, invites litigation and indeed had led to seemingly inconsistent decisions in the Federal Circuit. The district court here did not have the benefit of our guidance in *Kingsdown*, in which we sat *in banc* for the purpose, *inter alia*, of clarifying certain of our precedents. As stated therein:

> "Gross negligence" has been used as a label for various patterns of conduct. . . . We adopt the view that a finding that a particular conduct amounts to "gross negligence" does not of itself justify an inference of intent to deceive; the involved conduct, viewed in light of all the evidence, including evidence indicative of good faith, must indicate sufficient culpability to require a finding of intent to deceive. *See Norton v. Curtiss*, 433 F.2d 779, 167 USPQ 532 (CCPA 1970).

863 F.2d at 876, 9 USPQ2d at 1392.

The district court held that Sycor's misrepresentation of the nature of the amendment sufficed to support a holding of inequitable conduct before the Patent and Trademark Office. The district court described the attorney's communication as "disingenuous." The court stated that the "case law makes clear that, although a party's underlying conduct may be acceptable, that fact does not exculpate the party from an inequitable conduct finding [sic: holding] where the party misrepresented the nature of the underlying conduct to the PTO."

Intent to deceive should be determined in light of the realities of patent practice, and not as a matter of strict liability whatever the nature of the action before the PTO. *Accord Pfizer. Inc. v. International Rectifier Corp.*, 538 F.2d 180, 186, 190 USPQ 273, 278 (9th Cir. 1976), *cert. denied*, 429 U.S. 1040 (1977). "A patentee's oversights are easily magnified out of proportion by one accused of infringement . . . ." *Id.* at 196, 190 USPQ at 286. Given the ease with which a relatively routine act of patent prosecution can be portrayed as intended to mislead or deceive, clear and convincing evidence of conduct sufficient to support an inference of culpable intent is required.

When all of the circumstances are considered, including indications of good faith, we are left with a definite and firm conviction that a mistake has been made regarding Sycor's state of mind when it filed its Rule 312 amendment in the Patent and Trademark Office. *Anderson v. City of Bessemer City. N.C.*, 470 U.S. 564 (1985); *Kingsdown*, 863 F.2d at 876, 9 USPQ2d at 1392; *FMC Corp. v. Manitowoc Co.*, 835 F.2d 1411, 1416, 5 USPQ2d 1112, 1116 (Fed. Cir. 1987) (intent must be determined in view of all the circumstances). Here, there was no failure of compliance with 37 C.F.R. §1.118(a), which states that:

> **§ 1.118(a).** All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application.

Even if Sycor's statement in its covering letter to the examiner was in error or negligent, the Rule 312 amendment was made as of right, authorized by MPEP § 608.01(l). This right weighs against an inference of intent to deceive the examiner into entering the amendment.

Accordingly, we conclude that the district court's finding that Sycor intended to mislead or deceive the Patent and Trademark Office is clearly erroneous. Thus we need not reach the question of materiality, for absent the element of intent the court's holding of inequitable conduct was legal error, and thus exceeded the court's discretionary authority. The holding of unenforceability on this ground is reversed.

IV

Inequitable Conduct - The Viatron 21 Device

Datapoint appeals the district court's ruling that Sycor did not commit inequitable conduct by not disclosing the Viatron 21 device to the patent examiner.

The patent applicant is required to advise the patent examiner of all information known to the applicant that "a reasonable examiner would consider important in deciding whether to allow the application to issue as a patent". 37 C.F.R. § 1.56(a) (1989). This requirement has grown in importance because of the highly technical nature of the subject matter of many patent applications, the difficulties inherent in searching the worldwide technical literature, and the unique knowledge that the applicant may hold.

According to Datapoint, the existence of the Viatron 2l device became known to inventor Irwin during the time that Irwin was working on the invention of the '375 patent, including knowledge that the Viatron 21 used a tape cassette, albeit in a different system for data processing.

The district court found that the Viatron 21 device was not available as prior art. Datapoint does not on appeal challenge that finding, but merely calls the Viatron 21 "prior art" in arguing that it should have been disclosed. Since the Viatron 21 device was not prior art, it was not material to patentability. *Environmental Designs*, 713 F.2d at 698, 218 USPQ at 870. Absent materiality, inequitable conduct for failure to disclose can not lie.

The district court's determination on this point is affirmed.

V

Best Mode - 35 U.S.C. § 112

The district court held that claims 19-20, 22, and 24-28 of the '375 patent are invalid on the basis that Sycor concealed the best mode of carrying out the invention of these claims. Compliance with the best mode requirement is a question of fact, and is reviewed for clear error. *DeGeorge v. Bernier*, 768 F.2d 1318, 1324, 226 USPQ 758, 763 (Fed. Cir. 1985).

One of the objectives of the disclosed invention was to capture data "on magnetic tape cassettes of the general type presently finding extensive and widespread usage in audio entertainment equipment, but never heretofore used in datahandling apparatus." (Col. 1, lines 59-63.) The specification also stated that the invention includes cassettes "of the type which are almost universally available for audio purposes." (Col. 3, lines 32-33.) The district court, however, found that Sycor knew, in advance of filing the patent application, that standard audio tape was not the best mode for carrying out the invention. This finding is amply supported by the testimony of a former Sycor Vice-President- Engineering who was an employee of Sycor at the time the patent application was filed, and by other evidence, that Sycor purchased tape and cassettes of its own design and specifications and that these were different from standard audio tapes in their yield strength and magnetic characteristics.

Sycor argues that, at the time of the patent application, the 3M commercial audio tape that was on the market met its specifications. If so, it is this tape (or Sycor's own specifications) that had to be disclosed to satisfy the best mode requirement of 35 U.S.C. § 112, para. 1. While Sycor's argument may be relevant to enablement, it does not establish the best mode "contemplated by the inventor," which is a subjective inquiry. *See Spectra-Physic,. Inc. v. Coherent. Inc.*, 827 F.2d 1524, 3 USPQ2d 1737 (Fed. Cir. 1987); *see also Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 8 USPQ2d 1692 (Fed. Cir. 1988).

The district court's determination on this point is affirmed.

VI

Enablement - 35 U.S.C. §112

Claims 1, 3, 5-7, 9-12, 14-20, 22, 29-33, 35-42, and 44 were held invalid for lack of enablement. The district court held that the patent specification did not contain an enabling disclosure of the software program used to carry out the claimed invention, stating that "the patent specification's lack of any information concerning the invention's programs would require a person reasonably skilled in the art of computer programming to experiment unduly in attempting to write programs for the '375 device."

35 U.S.C. § 112 ¶ 1 provides that:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . .

Invalidity for lack of enablement is a conclusion of law and must be supported by facts proved by clear and convincing evidence, for the grant of the patent by the PTO carries with it the presumption of validity including compliance with § 112.

A decision on the issue of enablement requires determination of whether a person skilled in the pertinent art, using the knowledge available to such a person and the disclosure in the patent document, could make and use the invention without undue experimentation. It is not fatal if some experimentation is needed, for the patent document is not intended to be a production specification. *In re Gay*, 309 F.2d at 774, 135 USPQ at 316. *See Atlas Powder Co. v. E.I. Du Pont De Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984) (discussing the amount of experimentation).

When the challenged subject matter is a computer program that implements a claimed device or method, enablement is determined from the viewpoint of a skilled programmer using the knowledge and skill with which such a person is charged. The amount of disclosure that will enable practice of an invention that utilizes a computer program may vary according to the nature of the invention, the role of the program in carrying it out, and the complexity of the contemplated programming, all from the viewpoint of the skilled programmer. *See In re Sherwood*, 613 F.2d 809, 817, 204 USPQ 537, 544 (CCPA 1980), *cert. denied*, 450 U.S. 994 (1981). As the court observed in Sherwood, the writing of a program may require varying degrees of skill:

> In general, writing a computer program may be a task requiring the most sublime of the inventive faculty or it may require only the droning use of clerical skill. The difference between the two extremes lies in the creation of mathematical methodology to bridge the gap between the information one starts with ("the input") and the information that is desired ("the output").

613 F.2d at 816-17, 204 USPQ at 544.

The claimed invention of the '375 patent is not in the details of the program writing, but in the apparatus and method whose patentability is based on the claimed combination of components or steps. Further, experts for both sides testified that an experienced programmer could, without unreasonable effort, write a program to carry out the invention of the '375 patent. The possible design of superior software, or whether each programmer would work out the details in the identical way, is not relevant in determining whether the inventor has complied with the enablement requirement.

Expert witnesses testifying for Datapoint agreed that there were various ways of writing a program that would perform the '375 invention. Gordon Bell, Earle Pughe, and Fernando Corbato all testified that it would be relatively straightforward for a skilled computer programmer to design a program to carry out the claimed invention.

In Bell's deposition testimony, contrary to his testimony at trial, he averred:

> Q. Would it have been obvious in June of '69 for someone of ordinary skill to write the program for a computer to operate as a source data entry terminal given the functions of the source data entry terminal?
>
> A. Yes.

Earle Pughe testified:

> Q. And could anybody have built — reasonably skilled in the art built a fixed-program read-only memory device with a source data entry program?
>
> A. Yes, sir.

Fernando Corbato, another Datapoint expert, testified:

> [T]here is a tremendous amount of lore and understanding that one must have in order to carry it out which depending on who you are dealing with may or may not be state of the art. To someone with a, a skilled computer designer, it would appear to be very, very straightforward to do anything that was described in the patent. He probably would have felt that he had already been doing that. The problem was I don't think the patent describes any novel configuration.

The district court referred in its opinion to the testimony of Kay Magleby that one skilled in the art of computer programming would be hindered because such a person could not tell where the program format would be loaded, what would be a typical program format, what characters would be used, or what would be the range or limitations of the format program. Sycor points out that the '375 patent specification states that the format program is stored in the delay line buffer memory. On cross-examination, Magleby acknowledged that the specification contains a description of how the format program is entered into the delay line buffer memory:

> So here [in the '375 patent] I see a description of how, whatever this format program is, is entered into the delay line

> and stored on cassette tape.

In another exchange with Magleby:

> Q. Would one of ordinary skill have any difficulty in determining what the instruction format would be?
>
> A. I think one of ordinary skill could develop a product that would satisfy the claims of the patent.
>
> However, if there's something unique about this particular product as represented in the claims, then I think it should be explained clearly enough in the specification so that we can understand what's unique.

The format program is described in the specification as "character codes which are representative of and which initiate machine control functions." Datapoint's witness Professor Clark testified that additional information such as detailed flow charts, block diagrams, or source code listings were necessary in order to avoid spending experimental time. However, as noted in *Sherwood*, a description of such information may be adequate to a skilled programmer:

> In assessing any computer-related invention, it must be remembered that the programming is done in a computer language. The computer language is not a conjuration of some black art, it is simply a highly structured language. . . . [T]he conversion of a complete thought (as expressed in English and mathematics, i.e. the known input, the desired output, the mathematical expressions needed and the methods of using those expressions) into a language a machine understands is necessarily a mere clerical function to a skilled programmer.

613 F.2d at 817 n.6, 204 USPQ at 544 n.6. Although there have been circumstances wherein production of the computer program was not routine, as in *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 713 F.2d 788, 791, 218 USPQ 961, 963 (Fed. Cir. 1983), where the production of the program required one and one half to two person-years of work, such circumstances were not shown or suggested for the '375 invention.

The great weight of the expert testimony on both sides was that a programmer of reasonable skill could write a satisfactory program with ordinary effort. This requires the conclusion that the programs here involved were, to a skilled programmer, routine. The district court's finding that undue experimentation was necessary to write the program is clear error.

The holding that the claims are invalid for lack of enablement is reversed.

VII

Infringement - 35 U.S.C. § 271

Datapoint challenges the district court's finding that claims 19, 20, 25-28, 35-37, 40-42, and 44 of the '375 patent are infringed.

The Excluded Evidence

Datapoint argues that the district court erred in finding infringement of claims 40-42 and 44, in that the court unfairly barred Datapoint from introducing evidence to rebut the testimony of Sycor's witness Dr. Larky with respect to the term "fixed program".

Datapoint states that the definition of "fixed program" was presented in the '375 patent and in pre-trial discovery as a program that was "not easily changeable" by the data entry operator, and that Larky changed the definition during his testimony to a program that was "not self-modifying and which the operator could not alter." Datapoint states that the latter definition is correct, but that this was a substantial change, and a surprise at trial. To support its position of non-infringement based on this definition, Datapoint sought to introduce, at trial, excerpts from its source codes. Datapoint states that the surprise definition of a fixed program made the source codes relevant.

Sycor objected to this proffered evidence, on the ground that the source codes were requested during discovery, were refused by Datapoint and, despite an order to compel production, were never produced. Sycor states that Datapoint did not object to Larky's testimony as surprise when it was given, or for four months thereafter, or offer during that period to produce this previously-withheld information. Indeed, the source codes were offered into evidence on the last day of Datapoint's testimony in chief.

On this history, we conclude that the district court did not abuse its discretion in refusing to receive this evidence. *United States v. Cohen*, 888 F.2d 770, 774 (11th Cir. 1989) ("Absent an abuse of discretion, evidentiary rulings of the trial court will stand.") The court's trial management "should not be impeded by second guessing at the appellate level except in those rare instances when a clear abuse of discretion is firmly shown." *Rosemount*, 727 F.2d at 1549-50, 221 USPQ at 10 (upholding exclusion of expert testimony where expert not identified before trial despite court order).

We have carefully considered Datapoint's arguments and authorities, but Datapoint has not shown that the circumstances of this case show prejudicial error, or exceeded the trial court's discretionary authority. The exclusion of the source codes is not grounds for reversal or other remedial action.

The Burden of Proof

Datapoint argues that the district court shifted to Datapoint the burden of proving non-infringement, rather than requiring Sycor to meet its burden of proving infringement by a preponderance of evidence. Datapoint contends that it adequately showed at trial that the accused programs were self-modifying (i.e., not "fixed") in that they used "overstoring," and thus that Sycor had not met its burden of proof.

Sycor had provided evidence, through the testimony of its expert witnesses, that each element or step of the claims was embodied in Datapoint's equipment and method. The court thus directed its attention to Datapoint's defenses, stating in its opinion:

> The court recognizes that Sycor has the burden of proving by a preponderance of the evidence that Datapoint has infringed the '375 patent by Datapoint's hardware- software equipment combinations. Nevertheless, Datapoint has purported seriously to challenge Sycor's expert testimony in six areas. The court has therefore determined to approach the infringement issues, not from the standpoint of Sycor's affirmative assertions, but from Datapoint's defensive assertions. Except to the extent the court finds non-infringement in its findings below, the court is satisfied that, were the patent valid and enforceable, Sycor's evidence is otherwise sufficient to prove infringement by a preponderance of the evidence.

This statement does not support Datapoint's position that the district court required Datapoint to prove non-infringement by a preponderance of evidence.

In its defense Datapoint had presented evidence that there are three types of overstoring: overlays, the DOS interrupt handler, and the NOP JUMP instruction. The district court's opinion discusses the technological details, which need not be repeated here. The district court found that although the accused Datapoint devices had the capability of overstoring, Datapoint did not show that this capability was used. The court found that Datapoint had not shown that such overlays must occur in the DOS, and the court found that any possible use of overlays was not adequately explained. The court also found that Datapoint's DATASHARE interpreters use overlays, but that the evidence presented did not show sufficiently clearly that the overlays must be used. The court further found that the NOP JUMP instruction could not be used in most of the accused programs. While Datapoint contends that these findings show that the burden of proof was shifted to it, Datapoint has not shown that the trial court wavered from correct application of the burdens.

The court found in favor of Datapoint that the DATABUS IS interpreter 32K memory device was not a fixed program, and did not infringe. Sycor does not challenge this holding. However, Datapoint makes the argument that none of its products infringe because "Datapoint users have the option to program any Datapoint DATASHARE or DATABUS system for at least part of its hardware configuration". Datapoint refers to certain pages in its user manuals, one of which describes a "default configurator" that permits the user "to configure the run-time characteristics of his DATABUS interpreter," and another of which states that it "supports many configurations . . . via configuration options".

Sycor responds that the term "operational configuration" of claim 40, understood in light of the '375 patent specification, means at least the peripheral configuration of the terminal, such as input, output, and recording devices. Sycor explains that the fixed program of the '375 patent provides control for a given combination of specific peripherals, i.e., the hardware configuration, and contains the definitions of various keys, defined through the execution of the ROM program to initiate the action of the peripheral devices.

These arguments were generally before the district court. Datapoint has not met its burden of showing that the district court clearly erred in its findings. The information in Datapoint's user manuals on possible hardware or peripheral configuration at the user's option may, as Datapoint states, show that additional functions may be performed, but does not show clear error in the district court's holding that infringement of these claims was established by a preponderance of the evidence.

Claims 35-37

While the parties dispute whether Datapoint used the phrase "reverse doctrine of equivalents" at trial, we agree with Datapoint that the substance of the argument was raised. Datapoint argued that even if these claims appear to read literally on the Datapoint equipment, the products are changed in such substantial ways from that described in the '375 patent that infringement can not be found. *See SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1123, 227 USPQ 577, 587 (Fed. Cir. 1985) (*in banc*) (discussing the reverse doctrine of equivalents).

Datapoint states that its accused products are general purpose computers, rather than a special purpose terminal using a replaceable, hard-wired ROM, as contemplated in the '375 patent. Datapoint argues, as it did at trial, that its products are capable of processing data as the data are entered, and therefore that its products are not source data entry terminals. Datapoint states that its devices are so changed that, despite a literal reading of the claims on these devices, infringement is avoided under the "reverse doctrine". The district court agreed that Datapoint's products have some features in common with general purpose computers, but held that these features did not defeat infringement.

The addition of features does not avoid infringement, if all the elements of the patent claims have been adopted. *Radio Steel & Mfg. Co. v. MTD Prods.*, 731 F.2d 840, 848, 221 USPQ 657, 663-64 (Fed. Cir.), *cert. denied*, 469 U.S. 831 (1984). Nor is infringement avoided if a claimed feature performs not only as shown in the patent, but also performs an additional function. *Id.* at 848, 221 USPQ at 664. We have carefully considered Datapoint's argument that its hardware is "quite different" from that described in the '375 patent. We conclude that Datapoint has not shown clear error in the district court's finding of infringement by a preponderance of evidence.

Datapoint blames the success of Sycor's position as to infringe ment on the subject matter entered into the descriptive portion of the specification by the challenged Rule 312 amendment, see Part III *ante*. Sycor asserts that the district court did not adopt whatever enlarged claim interpretation Datapoint states Sycor intended to obtain through the Rule 312 amendment. Datapoint directs us to no apparent reliance by the district court on the descriptive text as modified under Rule 312.

Datapoint has shown no clear error in the district court's findings of infringement. The holding of infringement is affirmed.

VIII

Laches

Datapoint asserts that the district court erred in not finding material prejudice due to Sycor's asserted period of inaction in enforcing the '375 patent. The district court did not decide the question of laches, stating: "That the court has found for Datapoint today precludes a finding of material prejudice." Because we have reversed the majority of the rulings in favor of Datapoint, the defense of laches may require resolution. The issue is pertinent to the assessment of damages because it may affect the period of recovery for infringement. *See Sun Studs, Inc. v ATA Equip. Leasing, Inc.*, 11 USPQ 2d 1479, 1479 (Fed. Cir. 1989) (remanding for determination of laches).

The merits of the issue were not argued on this appeal, both sides agreeing that remand to the district court would be appropriate. Thus during the damages phase the court may consider the question of laches if it is duly raised.

IX

Other Issues

We have considered all the additional issues and arguments raised in the appeal and the cross-appeal. None changes the views expressed and decisions reached herein.

Costs

Taxable costs shall be assessed in favor of Northern Telecom.

Summary

Claims 19-20, 22 and 24-28 are invalid for failure to disclose the best mode. Claims 35-37, 40-42, and 44 are not invalid, are enforceable, and are infringed.

The cause is remanded for further proceedings consistent herewith.

AFFIRMED IN PART, REVERSED IN PART, AND REMANDED

United States Court of Appeals for the Federal Circuit

89-1034, -1035

NORTHERN TELECOM, INC.,

Plaintiff-Appellant,

v.

DATAPOINT CORPORATION,

Defendant/Cross-Appellant.

NEWMAN, *Circuit Judge*, concurring in part, dissenting in part.

I share the court's opinion as to Parts I through IV, and VI through IX. I respectfully dissent from the holding in Part V that certain claims are invalid for failure to comply with the "best mode" requirement of 35 U.S.C. § 112.

A holding of invalidity on this ground requires that the inventor knew of and concealed a better mode than was disclosed in the patent application. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384-85, 231 USPQ 81, 94 (Fed. Cir. 1986). It is facile, and erroneous, to infer that information not included in a patent application was necessarily concealed. Patent applications rarely contain every detail, for that is not their function, but infringers constantly seek to enlarge any omission into a fatal flaw. Challenge is easy; the penalty is extreme. Thus precedent requires that violation of the "best mode" provision be established by clear and convincing evidence. *Hybritech*, 802 F.2d at 1384, 231 USPQ at 94.

The fatal flaw with which Sycor was charged was the statement in the patent specification that standard audio tape cassettes were used to record the data, the district court holding that Sycor knew that standard audio tape was not the best mode. At the trial witnesses testified that commercial audio tape was used to record the data, that these tapes varied in quality, and that not all worked equally well. There was in evidence a document showing Sycor's specification of commercial tape parameters, including tests of tapes made by K/Tronics, TDK, 3M (Scotch brand), and ongoing tests of BASF tapes. The district court referred to Datapoint's contention that "Sycor knew at the time of filing the '375 patent application that this cassette specification was needed to practice the best mode", and held that "Sycor did not disclose the best mode". With respect to the 3M tape referred to by the panel majority, Sycor stated that the 3M tape met all of the parameters set out in its tape specification; while Datapoint argued that the 3M tape "apparently failed". The district court did not identify the 3M tape, or any other, as the best mode.

On this record, there was not clear and convincing evidence of concealment of a better mode known to the inventor. Nor was there any finding of concealment. It was undisputed that the specification of commercial audio tape parameters was prepared by Sycor for distribution. Distribution is inimical to concealment.

To determine whether an asserted omission amounts to concealment, such omission should be considered in light of all the circumstances. For example, consideration should be given to whether the omitted information was publicly known or readily ascertainable; whether there was any benefit to the patentee of concealment — or the absence of benefit; the materiality of the information; whether the interested public was actually prejudiced; and any evidence tending to show good or bad faith. In this case, each of these factors weighs on the side of Sycor.

It was undisputed that persons of ordinary skill were aware of differences among commercial audio tapes. As was stated in *In re Karnofsky*, 390 F.2d 994, 997, 156 USPQ 682, 685 (CCPA 1968):

> Where one of ordinary skill in the art would know how to select operating conditions so as to achieve a particular result, the failure to include a recitation of some specific operating conditions in the specification cannot give rise to a rejection either under the "enabling" or under the "best mode" requirement' of 35 U.S.C. § 112.

A patent document is not a "production specification". *In re Gay*, 309 F.2d 769, 772, 135 USPQ 311, 315 (CCPA 1962); *Manual of Patent Examining Procedure* § 608.01(h) (8th ed. May 1988). It seems to me that the information on commercial audio tape parameters is not untypical of work that is done after an invention has been made, when development continues and data accumulate, often concurrently with patent application work. When the patent specification is fully enabling, the failure to include information that is not necessary either to describe or to enable the claimed invention should not invalidate the claims under the "best mode" provision, unless the information was withheld for the purpose of concealment of a bette mode.

I would reverse the trial court's holding as based on incorrect law and the absence of clear and convincing evidence of failure to mee the "best mode" requirement.

United States Court of Appeals for the Federal Circuit

89-1034,-1035

NORTHERN TELECOM, INC.,

Plaintiff-Appellant,

v.

DATAPOINT CORPORATION,

Defendant/Cross-Appellant.

ORDER

ORDER

Before MARKEY, Circuit Judge, NEWMAN, Circuit Judge, and ARCHER, Circuit Judge.

Petition for rehearing having been filed in this case,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, denied.

The suggestion for rehearing in banc is under consideration.

The mandate will issue on August 9, 1990.

FOR THE COURT,

Dated: August 2, 1990

/s/ Francis X. Gindhart
Francis X. Gindhart
Clerk

cc: DONALD R. DUNNER
JERRY R. SELINGER

NORTHERN TELECOM V DATAPOINT CORP, 89-1034
(DCT - 3-82-1039-D)

Note: This order has not been prepared for publication in a reporter.

IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF TEXAS DALLAS DIVISION

NORTHERN TELECOM, INC.,	§	
	§	
Plaintiff/ Counterdefendant,	§ § §	
	§ §	Civil Action No.
VS.	§ §	CA3-82-1039-D
	§	
DATAPOINT CORPORATION,	§ § §	
	§	
Defendant/ Counterplaintiff.	§ § §	
	§ §	

MEMORANDUM OPINION

TABLE OF CONTENTS

I. BACKGROUND 5

II. UNENFORCEABILITY AND INVALIDITY 10

- A. Inequitable Conduct 10
  - 1. Audio Tape Cartridges 12
  - 2. Viatron 21 14
  - 3. HP 2116 14
  - 4. PDP-8 16
  - 5. SDS 910, 920, 930 16
  - 6. DSI 2000 17
  - 7. January 25, 1971 Response 17
  - 8. Rule 312 Amendments 18
  - 9. January 25, 1971 Amendments 33
  - 10. August 31, 1972 Amendment 36
  - 11. Spergal Patent 38
  - 12. SDS Magpak 39
  - 13. January 21, 1972 Affidavits 42
  - 14. Amendments Responsive to September 22, 1970 and May 1, 1972 Office Actions 47
- B. Distinct Claiming 50
- C. Best Mode 50
  - 1. Cassette Tape Drive Mechanism 50
  - 2. Programs 52
  - 3. Recording Digital Information 53
- D. Inadequate Disclosure 54
- E. Anticipation 57
  - 1. LINC 59
  - 2. AESOP-B 66
  - 3. PC (Programmed Console) 71
  - 4. HP 2116 75
  - 5. HP 9100A 81
  - 6. Wolf/Marino Patents 88
  - 7. Wood & Diaz Patents 90

        8. PDP-1 91
        9. PDP-8 92
        10. DX-1 94
        11. TC-500 95
        12. King Patent 98
        13. BR-90 102
        14. FLIDEN/Amdahl '120 Patent 104
        15. Spergal Patent 107
        16. Hagelbarger Patent 109
        17. Wang Data Translation System 112
        18. Howard et al. Patent 114
        19. Editing Display System 117
        20. McNaney Patent 120
        21. Reach Patents 125
        22. Viatron 21 134

    F. Obviousness 142

III. LACHES 156

IV. INFRINGEMENT 156

    A. Standards 156

    B. Datapoint Accused Devices 160

    C. Datapoint Non-infringement Arguments 193

        1. Read-Only Memory 193
        2. Built-In Program 199
        3. Fixed Program Dedicating to Given Configuration 202
        4. Standard Audio Tapes 208
        5. Control Logic 214
        6. Source Data Entry Terminal 215

V. ATTORNEY'S FEES 216
VI. SUMMARY 218

FITZWATER, District Judge:

The instant patent infringement action and counterclaim for a declaratory judgment of patent invalidity and unenforceability were tried to the court in what is certainly one of the longest civil trials in this district. The trial consumed 70 separate days during a period beginning January 20, 1987 and ending July 2, 1987. The parties introduced thousands of pages of exhibits and the transcript numbers several thousand pages. Following extensive post-trial briefing, the court has deliberated on the evidence and considered the legal issues presented. For the reasons that follow,[1] the court finds and concludes that the patent in suit, U.S. Patent No. 3,760,375 (the '375 patent), filed June 13, 1969 and issued September 18, 1973, entitled "Source Data Entry Terminal," is invalid and unenforceable, and that certain claims are anticipated and made obvious by the prior art. The court also finds and concludes that the accused Datapoint devices infringe claims 14, 19, 20, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, and 44 of the patent in suit. The court finds that the DATABUS interpreter on 32K memory equipment does not infringe claim 40 (and its dependencies). Claims 1, 3, 5, 6, 7, 9, 10, 11, 12, 15, 16, 17, 18, and 22 are not infringed. Claims 2, 4, 8, 13, 21, 23, 34, 43, 45, and 46 are not in issue. Accordingly, the court has today entered judgment in favor of Datapoint.

I.

BACKGROUND

Plaintiff, Northern Telecom, Inc. ("NTI"), the successor-in interest[2] to Sycor, Inc. ("Sycor"), the patent assignee, sues defendant, Datapoint Corporation ("Datapoint"), contending Datapoint has infringed the '375 patent by its manufacture and sale of 11 families of Datapoint processors that use various combinations of Datapoint software. NTI also alleges that Datapoint is liable for inducement to infringe and contributory infringement. Datapoint counterclaims, seeking to invalidate and declare unenforceable the patent in suit. NTI bottoms its infringement action on 36 claims of the patent, including five independent claims and 31 dependent claims. Two independent claims (1 and 19) are device claims and three (24, 29, and 40) are method claims.

---

[1] As permitted by Fed. R. Civ. P. 52(a), the court sets forth in this memorandum opinion its findings of fact and conclusions of law.

Because of the volume of evidence (both testimony and exhibits), the court has decided only the controlling issues presented by the parties' requested findings of fact and conclusions of law. The court assumes that, if a party did not request a fact finding or conclusion of law as to a particular issue, the party did not consider the issue to be essential to its case-in-chief or defense to the opposing party's claim or counterclaim.

Claim 1 reads as follows:

> A source data entry terminal device for capturing and storing data for future processing or the like, comprising in combination: a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof; an optical display means for visual character read-out of such data; means for coupling coded data entered into said terminal to a data recorder or reproducer means; and a programmed microprocessor interfaced to each of said entry means, said display means and said coupling means; said microprocessor including a fixed-program read-only memory and a central logic unit embodying substantially all of the control logic for said entry means and display means; said read-only memory having a built-in program dedicating the terminal to a particular functional configuration and establishing an instruction set which timeshares said central logic unit with said entry means and display means to control the same in conformance with such functional configuration.

Dependent upon claim 1 are claims 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15.

Claim 19 reads as follows:

---

[2] Datapoint alleges that NTI does not own the rights to the '375 patent and thus has no right to maintain this action. The court finds and concludes that title to the patent has been effectively transferred from the inventors to NTI and thus rejects this argument.

> A source data entry terminal device for capturing and storing data for future processing or the like, comprising in combination: a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof; an optical display means for visual readout of data characters entered by said keyboard means; a magnetic tape recorder/reproducer means including at least one cassette-type magnetic tape magazine for recording data thereon entered by said keyboard and read out by said display; and control means interfaced to said data entry means, said optical display means and said recorder/reproducer means and intercoupling the same for cooperative operation such that data entered by said keyboard means is visually displayed and magnetically recorded on said cassette tape magazines.

Dependent upon claim 19 are claims 20, 21, 22, and 23.

Claim 24 reads as follows:

A method of source data capture, comprising the steps: generating coded signals representative of source data desired to be captured; and recording signals corresponding to those generated upon magnetic tape enclosed within cassette tape cartridges of the basic type conventionally used for audio recording.

Dependent upon claim 24 are claims 25, 26, 27, and 28.

Claim 29 reads as follows:

> A method of source data capture, comprising the steps: generating coded signals representative of alphanumeric source data desired to be captured; visually displaying the data of which said signals are representative by use of such signals; using a buffer memory to temporarily store the data being displayed; and recording the data on magnetic tape after the data has been visually displayed.

Dependent upon claim 29 are claims 30, 31, 32, 33, 34, 35, 36, 37, 38, and 39.

Claim 40 reads as follows:

> A method of implementing a source data entry terminal device, comprising the steps: connecting selected input/output

peripheral components including at least a keyboard data entry means and a visual data display means to a buffer memory and to a central processor organization, and using said buffer memory for temporary storage of data entered by said keyboard means; incorporating control logic for all such peripheral components in the central processor and controlling each such component by the central processor, such that said peripheral components need have substantially no local control logic of their own; and dedicating the terminal to a given operational configuration by incorporating a fixed program in said central processor.

Dependent upon claim 40 are claims 41, 42, 43, 44, 45, and 46. Claims 2, 4, 8, 13, 21, 23, 34, 43, 45, and 46 are not in issue in the case.

The patent contains the following four figures:

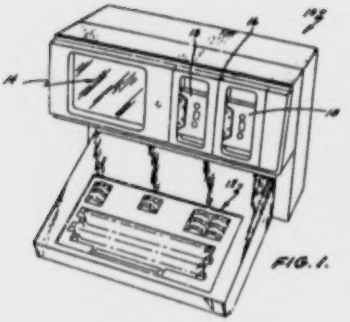

FIG. 1.

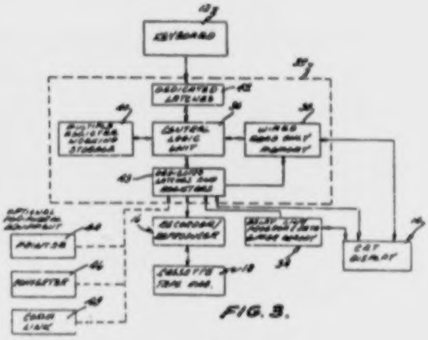
KEYBOARD
CONTROL LOGIC UNIT
WIRED READ ONLY MEMORY
RECORDER/REPRODUCER
PRINTER
CRT DISPLAY

FIG. 3.

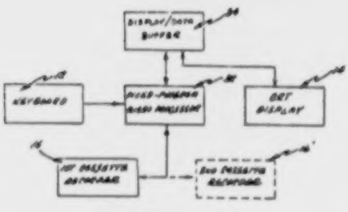
DISPLAY/DATA BUFFER
KEYBOARD
CRT DISPLAY

FIG. 2.

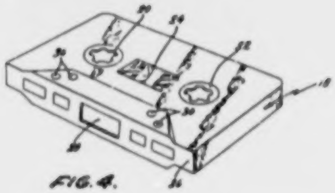

FIG. 4.

Datapoint alleges that it has not infringed the '375 patent, and counterclaims for patent invalidity and unenforceability, contending NTI's predecessor-in-interest, Sycor, committed inequitable conduct and fraud on the Patent and Trademark Office ("PTO") in obtaining the patent in suit and failed adequately to disclose the invention. Datapoint asserts that Sycor did not comply with 35 U.S.C. § 112 because it failed to distinctly claim the subject matter which it regards as its invention; failed to disclose the best mode contemplated for carrying out the invention; and failed in the patent specification to enable one skilled in the art to make and use the invention. Datapoint also contends the invention was anticipated in and made obvious by the prior art. Datapoint posits that NTI is guilty of laches because it failed to file this infringement action until 1982, when NTI knew of any alleged infringing activity in 1976.[3]

II.

UNENFORCEABILITY AND INVALIDITY

A.

Datapoint alleges that the '375 patent is unenforceable because Sycor, NTI's predecessor-in-interest, engaged in inequitable conduct in its prosecution of the patent application.

To demonstrate that Sycor committed inequitable conduct, Datapoint must prove by clear and convincing evidence (1) that Sycor misrepresented or failed to disclose material information regarding the '375 patent and (2) that Sycor did so with the required level of mental culpability. *See In re Jerabek*, 789 F.2d 886, 889 (Fed. Cir. 1986). The materiality threshold can be established by any of four tests (*see* discussion *infra* at § II (A) (8) (c)), but the appropriate starting point is whether "there is a substantial likelihood that a reasonable [PTO] examiner would have considered the omitted reference or false information important in deciding whether to allow the application to issue as a patent." *J. P. Stevens & Co., Inc. v. Lex Tex Ltd., Inc.*, 747 F.2d 1553, 1559 (Fed. Cir. 1984), *cert. denied*, 474 U.S. 822 (1985). Materiality and intent must be considered together:

---

[3] Datapoint also contends NTI does not have legal ownership of the patent, a proposition the court has rejected *supra* at note 2.

the more material the omission or misrepresentation, the less intent that must be shown to reach a conclusion of inequitable conduct. *Akzo. N.V. v. U.S. International Trade Commission*, 808 F.2d 1471, 1481-82 (Fed. Cir. 1986), *cert. denied*, ___ U.S. ___, 107 S.Ct. 2490 (1987).

With respect to the required level of mental culpability, Datapoint need not prove by direct evidence that Sycor acted with specific fraudulent intent. Intent may also be proven by showing acts, the natural consequences of which are presumed by the actor. *J. P. Stevens*, 747 F.2d at 1560. Moreover, proof of deliberate scheming is not needed; gross negligence is sufficient. *Id.* Gross negligence is present when the actor, judged as a reasonable person in his position, should have known the materiality of a withheld reference. *Id.* (citing *Driscoll v. Cebelo*, 731 F.2d 878, 885 (Fed. Cir. 1984); *Kansas Jack, Inc. v. Kuhn*, 719 F.2d 1144, 1151 (Fed. Cir. 1983)). On the other hand, simple negligence, oversight, or an erroneous judgment made in good faith are insufficient. *J. P. Stevens*, 747 F.2d at 1560.

If Datapoint satisfies the threshold levels of materiality and mental culpability, the court then balances the level of materiality against the level of intent to determine whether Sycor committed inequitable conduct. *Hycor Corp. v. Schlueter Co.*, 740 F.2d 1529, 1539 (Fed. Cir. 1984). A lesser showing of materiality of misrepresented information may suffice when an intentional scheme to defraud is established; a greater showing of materiality would necessarily create an inference that its nondisclosure was wrongful. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1363 (Fed. Cir.), *cert. denied*, 469 U.S. 821 (1984) (quoting *Digital Equipment Corp. v. Diamond*, 653 F.2d 701, 716 (1st Cir. 1981)). The precise balancing formulation apparently can vary according to the materiality test employed. *See American Hoist*, 725 F.2d at 1363.

-1-

Datapoint contends Sycor is guilty of inequitable conduct because it failed to disclose in the '375 patent application four prior Sycor patent applications that pertained to recording digital data on audio tape cartridges. Datapoint alleges that the other patents were material to the '375 patent application and that Sycor breached its duty of candor and good faith in dealing with the PTO when it failed to disclose the patents. NTI counters that the patents were not material because they involved *spindle* cassette drive digital recording technologies and the '375 patent pertains to a *capstan* cassette drive. The court finds that Datapoint has failed to prove inequitable conduct by clear and convincing evidence.

Datapoint has advanced what is essentially a best mode argument concerning *spindle*-driven audio cassette cartridges versus *capstan* cassette tape drives. The court concludes that a reasonable PTO examiner would not have considered the patents material because, as the court explains *infra* at § 11(C)(1), Sycor complied with the 35 U.S.C. § 112 best mode requirement as it pertained to the cassette tape drive mechanism.[4] Moreover, given the low degree of materiality, Datapoint was required, but failed, to prove a high level of intent or gross negligence. Sycor's failure to disclose the four patents was not shown to be intentional or grossly negligent so as to offset the lack of materiality of the undisclosed information.[5]

-2-

Datapoint contends Sycor's failure to disclose the existence of the Viatron Systems Corporation ("Viatron") Viatron 21 constituted inequitable conduct. The court disagrees.

The court has found *infra* at § 15(E) (22) that the Viatron II is not prior art to the '375 patent. Datapoint has failed otherwise to show by clear and convincing evidence that a reasonable examiner would consider the Viatron II important in deciding whether to issue the '375 patent. Datapoint has also failed to prove that Sycor had a culpable mental state in not disclosing the Viatron 21. Absent the requisite materiality and intent, the court holds that Sycor's failure to disclose the Viatron 21 did not constitute inequitable conduct.

---

[4] This is to be distinguished from the court's holding infra at § II(C)(3) that Sycor did not disclose the best mode with respect to the magnetic tape itself (as opposed to the tape drive mechanism). The court understands Datapoint's instant inequitable conduct argument, however, to be directed only at the failure to disclose tape drive technology.

[5] Datapoint also urges a slightly modified version of this argument. Datapoint argues that Sycor misrepresented the identities of the actual inventors of the technology in the '375 patent because the best mode was in fact the technology disclosed by the four prior Sycor patents. This argument likewise fails for the reasons stated above.

-3-

Datapoint contends Sycor committed inequitable conduct by not intentionally or negligently failing to disclose in the '375 patent application the existence of the Hewlett-Packard HP 2116 ("HP 2116"), a general purpose computer. Defendant did not prove this assertion by clear and convincing evidence.

Sycor disclosed to the PTO the existence of other general purpose computers like the HP 2116 when it disclosed U.S. Patent No. 3,406,371, Amdahl et al. (the "Amdahl patent"). The '375 patent application refers to and distinguishes itself from other general purpose computers and a reference to the HP 2116 would thus have been merely cumulative. Because a cumulative reference is not material, *see J. P. Stevens,* 747 F.2d at 1559-60; *Kimberly-Clark Corp. v. Johnson & Johnson,* 745 F.2d 1437, 1455- 1456 (Fed. Cir. 1984), it was incumbent upon Datapoint to prove that the HP 2116 was more relevant than the other general purpose computers Sycor disclosed.

Datapoint apparently assumes the HP 2116 was more relevant because co-inventor Samuel Irwin ("Irwin") knew the HP 2116 could be modified with a Philips cassette recorder peripheral. Datapoint has not proven that Irwin knew the HP 2116 could be so modified.

Irwin was employed by Hewlett-Packard as a computer marketing consultant while Hewlett-Packard was developing the HP 2116. (Tr. 4:97; 39:105).[6] During this period Hewlett-Packard considered using a Philips cassette recorder as a peripheral to the HP 2116, but finally rejected this idea. (Tr. 39:162). One Hewlett-Packard employee, Steve Porter ("Porter"), did regularly use such a modified HP 2116 at work. Although Irwin daily worked in the same building where Porter used the modified HP 2116, Datapoint did not produce evidence that persuades the court that Irwin actually saw or worked with the device.

Because the court has not found that Sycor intentionally, or by gross negligence, failed to disclose the HP 2116 or that such nondisclosure was material, the court rejects this inequitable conduct argument.

---

[6] Trial record references are cited throughout this memorandum opinion by volume and page. The court has converted to arabic numerals those record volumes designated by the court reporter by Roman numerals.

-4-

Datapoint next contends Sycor committed inequitable conduct by not disclosing in the '375 patent application the existence of the Digital Equipment Co. PDP-8, a general purpose computer. As the court notes *supra* at § II(A)(3) regarding the H.P. 2116, Sycor did disclose to the PTO the existence of other general purpose computers like the PDP-8 when Sycor disclosed the Amdahl patent. Because the '375 patent application distinguishes itself from other general purpose computers, a reference to the PDP-B would have been merely cumulative, and thus is not material. See *J. P. Stevens*, 747 F.2d at 1559-1560; *Kimberly-Clark*, 745 F.2d at 1455-1456. Datapoint may contend the PDP-8 was more relevant than other general purpose computers. It alleges that "Mr. Irwin intended his '375 device to compete in the same market as the PDP-8." Datapoint has completely failed, however, to support this allegation, as the record citations that Datapoint advances are irrelevant to Irwin's intent to compete.

Datapoint also has not shown that Sycor intentionally (or even through gross negligence) failed to disclose the PDP-8. The court rejects this inequitable conduct argument.

-5-

Datapoint next attempts to predicate an inequitable conduct argument on Sycor's failure to disclose the Scientific Data Systems, Inc. ("SDS") model SDS 910, 920, and 930 computers. The court rejects this argument because Datapoint has failed to persuade the court that these devices would have been material to a reasonable PTO examiner. Absent clear and convincing evidence regarding materiality, the omission is not shown to be inequitable.

-6-

Datapoint next contends that Sycor's failure to disclose the existence of the Data Systems, Inc. DSI 2000 computer in the '375 application constitutes inequitable conduct. The court disagrees. Datapoint has failed to persuade the court that there is a substantial likelihood that a reasonable PTO examiner would have considered the DSI 2000 important in deciding whether to allow the '375 application.

-7-

Datapoint next argues that Sycor committed inequitable conduct by misrepresenting the content of patent claims 29 and 40 in attempting to distinguish a cited prior art reference. The court finds no inequitable conduct under the clear and convincing evidence standard.

In a response filed with the PTO on January 25, 1971, Sycor distinguished a cited prior art reference by representing that:

> Perhaps even more importantly, none of the references of record appears to anticipate in any way the use of a *fixed-program read-only memory*, and this component is of the very essence of this invention, with all independent claims other than [claims 19 and 24] including recitations of this component.

(PX 2 at 51). (Emphasis added). As NTI admits, this statement is incorrect. Two of the independent claims, claims 29 and 40, clearly contain no reference to a "fixed-program read-only memory." Datapoint contends the representation is so material that whether it was intentionally or negligently made it constitutes inequitable conduct rendering the '375 patent unenforceable in its entirety. NTI responds that the error was inadvertent and not misleading and therefore does not constitute inequitable conduct.

The court finds the misrepresentation was not material. The statements are contained in one sentence of a 9-page response to the PTO. Sycor does not thereby attempt to alter or redefine claims 29 and 40, and the statement would be recognized as obviously wrong when compared by the PTO examiner with the actual claim language. The court finds further that the misrepresentation was nothing more than an isolated, inadvertent mistake. Datapoint has failed to show that the misrepresentation was intentional, or grossly negligent, to such a degree as to counterbalance low materiality.

-8-

Datapoint alleges that Sycor committed inequitable conduct by misrepresenting that five amendments made to the '375 patent were primarily to correct typographical errors and other such discrepancies and that the amendments "merely add to the clarity and readability of the specifications." The amendments in question pertained to whether the '375 invention's memory or program was "hardwired." For the reasons that follow, the court finds by clear and convincing evidence that the conduct in question was inequitable and that, as a matter of law, the '375 patent is thereby rendered unenforceable.

-a-

On July 26, 1973, the PTO issued a notice of allowance for the '375 patent in which the PTO stated (1) its belief that the application was valid and (2) its intent to issue the patent once the applicant paid the fee. Instead of immediately paying the issuance fee, Sycor moved to amend the '375 patent under PTO Rule 312, 37 C.F.R. § 1.312 (available at 34 Fed. Reg. 6843-44 (1969)), which stated:[7]

> Amendments after the notice of allowance of an application will not be permitted as a matter of right. However, such amendments may be made if filed not later than the date the issue fee is paid, on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

In Sycor's request for the Rule 312 amendment, Sycor stated:

> The present amendment under Rule 312 is primarily for the purpose of correcting *certain typographical errors* and other such discrepancies noted in the specification upon a final review of the same, immediately prior to payment of the issue fee. The errors and discrepancies sought to be corrected by this amendment were not noticed previously, and thus could not have been corrected before the present time; because the corrections *merely add to the clarity and readability* of the specifications, entry of the amendment is believed to be in order and is solicited.

(Pl. Ex. No. 2, p. 134). (Emphasis added). Sycor's application requested 25 specific amendments to the '375 patent. The five amendments to which Datapoint objects (with the added material underlined) are:

---

[7] 37 C.F.R. § 1.132 was amended in 1982.

1) a wired *or like* read-only memory (PX 1, col. 2, l. 11);

2) read-only memory containing a hardwired *or otherwise fixed* program (PX 1, col. 2, l. 11);

3) a hardwired or fixed program (PX 1, col. 2, l. 17);

4) a wired *or like* ROM *of the form just mentioned* is unalterable (PX 1, col. 8, l. 15); and

5) the wired-in (*or otherwise fixed*) program in the ROM (PX 1, col. 9, l. 54).

On September 15, 1973, the PTO accepted the Rule 312 amendments.

Datapoint contends Sycor misrepresented the amendments as "typographical errors" when in fact the amendments were

> departures from or additions to the original disclosure, and were intended to alter in material respects the original disclosure and the scope of the claims as allowed by the Patent Office Examiner prior to the Rule 312 Amendment, by removing the limitation in independent claims 1 and 40 that the "fixed program" be physically fixed in a hardwired ROM.

NTI responds that the '375 patent's independent claims clearly include not only a wired fixed-program read-only memory, but all types of fixed-program read-only memories. NTI contends the amendments to the specification were not only allowable, but were required in order to conform the specification to the independent claims.

As the court has explained above, inequitable conduct requires proof by clear and convincing evidence of a threshold of materiality of the nondisclosed information and of the prosecutor's intent. Once the thresholds of materiality and intent are established, the court then conducts a balancing test to determine whether the scales tilt to a conclusion that inequitable conduct occurred. *In re Jerabek*, 789 F.2d at 889-90; *American Hoist*, 725 F.2d at 1363-64.

-b-

The court finds first that Sycor misrepresented to the PTO that the five amendments were "primarily for the purpose of correcting certain typographical errors and other such discrepancies noted in the specification" and that the amendments "merely add to the clarity and readability of the specifications." The amendments neither cured "typographical" errors nor increased the "clarity" or "readability" of the specification. Instead, they changed the actual meaning of the specification and thus amounted to substantive changes.

-c-

The court next determines that the misrepresentations were material.

The Federal Circuit "has rejected any single test for 'materiality' in determining inequitable conduct." *Argus Chemical Corp. v. Fibre Glass-Evercoat Co.*, 759 F.2d 10, 14 (Fed. Cir.), cert. denied, 474 U.S. 903 (1985). It has instead recognized that the inequitable conduct threshold can be established by any of four tests. *J. P. Stevens*, 747 F.2d at 1559. The first is an *objective* "but for" test — that the misrepresentation was so material that "but for" the misrepresentation the patent would not have issued. The second test is the *subjective* "but for" test — the misrepresentation caused the patent examiner to approve the patent application when he would not have otherwise done so. The third test has been labeled the "but it may have been" test — in the course of the patent prosecution, the misrepresentation might have influenced the examiner. The fourth test is the PTO test, which arises from PTO Rule 56(a). *See* 37 C.F.R. § 1.56(a) (1987). This test asks "whether there is a substantial likelihood that a reasonable examiner would have considered the omitted reference or false information important in deciding whether to allow the application to issue as a patent." *J. P. Stevens*, 747 F.2d at 1559; *American Hoist*, 725 F.2d at 1362. The PTO standard is the "appropriate starting point" for any materiality analysis because it is the broadest test and encompasses the first three tests. The PTO standard also most closely aligns with how one ought to conduct business with the PTO. *Id.*[8] at 1363. Accordingly, the court applies the PTO test in the instant case.

---

[8] No single inequitable conduct materiality standard has arisen because inequitable conduct analysis requires that the materiality of the misrepresentation be balanced with the prosecutor's intent in making the misrepresentation. Where the misrepresentation meets an objective "but for" materiality inquiry — that is, but for the misrepresentation the patent would not have issued — a lower level of intent is required to prove inequitable conduct. Coversely, where a reasonable, examiner would have considered the information important, but not crucial, to his

At the time Sycor applied for the Rule 312 amendments, the Manual of Patent Examining Procedure contained an in-depth explanation of the PTO's procedures for considering such amendments. The Manual stated that "[a]fter the Notice of Allowance has been mailed, the application is technically no longer under the jurisdiction of the Primary Examiner." Patent and Trademark Office, U.S. Department of Commerce, *Manual of Patent Examining Procedure* § 714.16 (3d ed., rev. July 1967) [hereinafter PTO Manual]. According to PTO Manual § 714.16, Sycor could not have demanded consideration of these amendments "as a matter of right."

> Prosecution of a case should be conducted before, and thus be complete including editorial revision of the specification and claims at the time of the Notice of Allowance. However, where amendments of the type noted are shown (1) to be needed for proper disclosure or protection of the invention, and (2) to require no substantial amount of additional work on the part of the [PTO], they may be considered and, if proper, entry may be recommended by the primary examiner.

Id. (Emphasis in original).

Sycor's amendments were not "typographical" revisions; at the very least they were editorial revisions. It would have been important to a reasonable PTO examiner for Sycor to reveal the true character of the changes in order to determine whether they were "needed for proper disclosure" and would "require no substantial amount of additional work on the part of the [PTO]." Sycor avoided making such a showing by falsely characterizing the changes as merely "typographical."

PTO Manual § 714.16 further requires that "[a]s to amendments affecting the disclosure ... the remarks accompanying the amendment must fully and clearly state the reasons on which

---

decision, a showing of more than gross negligence may be required. *Id.* Recent jurisprudence makes clear that in inequitable conduct analysis the PTO standard is the "major standard for materiality." *Akzo, N.V. v. U. S. International Trade Commission*, 808 F.2d 1471, 1481 (Fed. Cir. 1986); *see also Pacific Furniture Mfg. Co. v. Preview Furniture Corp.* 800 F.2d 1111, 1114 (Fed. Cir. 1986); *A. B. Dick Co. v. Burroughs Corp.*, 798 F.2d 1392, 1397 (Fed. Cir. 1986); *In re Jerabek*, 789 F.2d 886, 890 (Fed. Cir. 1986).

reliance is placed to show: (1) why the amendment is needed; (2) why the proposed amendment or new claims require no additional search or examination; (3) why the claims are patentable, and (4) why they were not earlier presented."

Sycor's amendments certainly affected the disclosure. What the specification had disclosed as only a "wired program," the amendments changed to a "wired or otherwise fixed program." Sycor did not make the required showing regarding why the amendments were needed, why the amendments would require no additional "search or examination," or why the amendments "were not earlier presented." Sycor escaped such a showing by falsely characterizing the amendments as "typographical" error corrections and corrections intended merely to add to the clarity and readability of the specification. The *PTO Manual* makes clear that "a reasonable patent office examiner" would consider Sycor's false characterization of these amendments "important in deciding whether to allow the application to issue as a patent." If Sycor had correctly characterized the amendments as major changes in the specification (or even editorial changes), a reasonable PTO examiner would have required Sycor to make the heightened showing required by the *PTO Manual* before allowing the '375 patent to issue with the amendments. If Sycor had truthfully characterized the changes, a reasonable PTO examiner likely would have held the amendments to be inappropriate in the Rule 312 context and refused to grant the request. This would have subjected Sycor to the requirement that it justify why no new examination was needed, why the changes did not affect patentability, and why they were not earlier presented.[9]

The court holds that Datapoint has made the threshold showing that Sycor's misrepresentations concerning the Rule 312 amendments were material because there is "a substantial likelihood that a reasonable patent office examiner would have considered" Sycor's misrepresentation "important in deciding whether to allow the application to issue as a patent." *See J. P. Stevens*, 747 F.2d at 1559.

---

[9] The materiality of the changes is also evidenced by the fact that, in the present litigation, the type of memory claimed in the patent is central to one of the infringement questions. *See infra* § IV(B) (1).

-d-

The court next decides whether Datapoint has proven by clear and convincing evidence that Sycor *intentionally* misrepresented the nature of these amendments to the PTO. The court finds that the misrepresentations were intentional.

Datapoint offered five experts who testified that these amendments were major changes of the disclosure. Gordon Bell ("Bell") testified the amendments "change the nature of the kind of ... machine. It converts the machine almost from a very special purpose machine to quite a general purpose machine." (Tr. 50:11). Kay Magleby ("Magleby") testified that "[w]hen you insert the word 'or the like' then that opens it up to any form of read-only memory device and so it makes it a much broader interpretation." (Tr. 40:32). He opined that the amendments "broaden the interpretation significantly." (Tr. 40:33). Earle Pughe ("Pughe") testified that the amendments "substantially expanded the scope of the claim." (Tr. 57:144). He also stated that when he read "these changes that they [Sycor] stuck in it looks like to me that they are trying to say, to expand that a little." *Id.* Fernando Corbato ("Corbato") testified that the amendments were not clerical error corrections but instead constituted "a very substantive change." (Tr. 67:70). Thomas Osborne ("Osborne") testified that between June 13, 1969, when the application was filed, and February 9, 1973, when Sycor applied for the Rule 312 amendments, a great deal of progress had occurred in the computer field. Regarding the column 2, line 11 amendment that added "or otherwise fixed program," Osborne testified that "there was a lot of technological advance between that time [of the original application] and this [the amendment]" and that this amendment "expands [the disclosure] to incorporate other technologies that may not have been in mind at that time. It greatly broadens the aspect of what's said." (Tr. 55:25).

The court is unable to find from the trial evidence that the amendments did concern typographical errors or add clarity or readability to the specification. Although NTI does not have the burden of proof on the inequitable conduct issue, it presented no evidence explaining why Sycor wrongly characterized these amendments or indicating that the misrepresentations resulted from simple negligence or an honest mistake.[10] On the other hand, because direct proof of the patent prosecutor's intent to mislead is normally absent, Datapoint is not required to prove Sycor's actual state of mind. Sycor's intent may be proven by showing acts, the natural consequences of which are presumably intended by the actor. *Rohm & Haas Co. v. Crystal Chemical Co.*, 722 F.2d 1556, 1571 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). The patent prosecutor's submission of obviously false representations "usually will support the conclusion that" those misrepresentations were part "of an intentional scheme to defraud the PTO. *Id.* The present trial record leads to the finding that Sycor acted with the specific intent to deceive the PTO.

NTI defends against the misrepresentation claim on two grounds. First, NTI contends the amendments were valid because they brought the specification in line with the independent claims. NTI reasons that, because claim 1 of the '375 patent states a fixed-program read-only memory, the '375 patent was clearly not limited to a hard-wired read-only memory and Sycor could appropriately amend the specification so that it was not so limited. NTI asserts that putting "or otherwise fixed" in the disclosure did not constitute new matter under 37 C.F.R. § 1.118(a) (1987) and that Sycor's doing so complied with a provision of the *PTO Manual* that requires a party to "amend the drawing and specification to show this [new] subject matter" when the specification fails to reflect the subject matter of the independent claims. *PT0 Manual* § 608.01(l) (3d ed., rev. Jan. 1968).

NTI's argument misses the mark. Whether Sycor could or should have amended the disclosure does not affect the fact that Sycor *misrepresented* why it made the amendments. Sycor did not explain to the PTO that the amendments were not new matter or why the *PTO Manual* required the amendment. NTI cannot, after the fact, excuse Sycor's disingenuous conduct by explaining why Sycor would have been warranted in requesting the Rule 312 amendments.

The case law makes clear that, although a party's underlying conduct may be acceptable, that fact does not exculpate the party

---

10 NTI does contend *infra* that the amendments were appropriately offered to conform the specification with the independent claims and complied with the PTO Manual.

from an inequitable conduct finding where the party misrepresented the nature of the underlying conduct to the PTO. In *Driscoll*, 731 F.2d at 885, the Federal Circuit affirmed a finding that the patent prosecutor committed inequitable conduct by not disclosing a material prior patent. The prosecutor argued that the PTO would still have allowed the patent even had the prosecutor disclosed the prior patent. The court held that whether the prosecutor's patent "may be patentable over the withheld prior art, as argued by [the prosecutor] is not relevant. What is relevant is that the board found that a reasonable examiner would have considered such prior art important in deciding whether to allow the patent application." *Id.* at 884.[11]

In *Gardco Mfg. Inc. v. Herst Lighting Co.*, 820 F.2d 1209 (Fed. Cir. 1987), the court rejected the prosecutor's argument that its patent was valid despite the concealed material prior art. The court held that whether the "undisclosed art anticipates the claimed invention or whether it would have rendered the claimed invention obvious under 35 U.S.C. § 103" was not relevant to the district court's finding that the prosecutor committed inequitable conduct by not disclosing the prior art. *Id.* at 1214. In *Norton v. Curtiss*, 433 F.2d 779 (C.C.P.A. 1970), the court concluded that a district court must not overlook indications the prosecutor committed inequitable conduct simply because the application "*should* have been patented." *Id.* at 795. (Emphasis in original). In *A. B. Dick Co. v. Burroughs Co.*, 798 F.2d 1392, 1397 (Fed. Cir. 1986), the court rejected the prosecutor's argument that the nondisclosed prior art did not constitute inequitable conduct because the PTO, with knowledge of the art, eventually found the patent valid. The court held that "the test for materiality is *not* whether there is anticipation or obviousness but, rather, what 'a reasonable examiner would consider important in deciding whether to allow the application to issue as a patent.'" *Id.* (Emphasis in original; ellipses omitted). Finally, in *Hazel-Atlas Glass Co. v. Hartford-Empire Co.*, 322 U.S. 238 (1944), the Supreme Court rejected the patent prosecutor's argument that a fraudulently prepared article supporting the patent application was not relied upon by the circuit court in upholding the patent and that the article was true. The Court held that the prosecutor's inequitable conduct precluded the assertion of these arguments. *Id.* at 247.[12]

---

[11] Thus to the extent NTI offers this argument to show the misrepresentations were immaterial, the court rejects the contention. As in *Driscoll*, what is dispositive for the inequitable conduct inquiry is whether a reasonable PTO examiner would have considered the matter important to his decision.

A patent applicant bears a special duty of candor in dealing with the PTO. In order for the patent system to work effectively, a patent applicant must be held to "(t)he highest standards of honesty and candor." *Hycor Corp.*, 740 F.2d at 1538 (quoting *Norton*, 433 F.2d at 794). The PTO must be able to rely on the applicant's integrity and deal with the applicant in a spirit of trust and confidence. *Kingsland v. Dorsey*, 338 U.S. 318, 319 (1949). Accordingly, irrespective whether Sycor would have been entitled to the amendments had it correctly represented their import does not affect the court's inequitable conduct analysis.

NTI contends second that "the fact that the Examiner accepted the proposed changes is virtually conclusive of the fact that the changes were proper." NTI cites *Technicon Instruments Corp. v. Coleman Instruments Corp.*, 385 F.2d 391 (7th Cir. 1967), in support of this proposition. The court disagrees.

Technicon was an infringement action which centered on whether an "air bubble" claim was disclosed in an earlier patent or whether its subsequent addition to the patent was new matter. The defendant contended it was new matter, although the defendant's own expert testimony showed that it was not. In holding it was not new matter the Seventh Circuit stated:

> The Patent Office did not deem it "new matter." It was satisfied. Their finding should be given "special weight."

385 F.2d at 393. This particular holding in *Technicon* has been followed only once. In *Acme Highway Products Corp. v. D. S. Brown Co.*, 431 F.2d 1074 (6th Cir. 1970), *cert. denied*, 401 U.S. 956 (1971), the Sixth Circuit held that "[t]he Patent Office's judgment on such technical issues, *i.e.*, whether a modification is an embellishment or is of patentable importance, is entitled to special weight." *Id.* at 1081.

---

[12] In *Standard Oil of California v. United States*, 429 U.S. 17, 18 & n.2 (1976) (per curiam), the Court departed from a principle of *Hazel-Atlas* (necessity for appellate leave before district court can reopen a case which had been reviewed on appeal). That holding is inapplicable here and thus does not affect this court's reliance upon *Hazel-Atlas*.

Neither *Technicon* nor *Acme Highway* persuades the court that the PTO's allowing the Rule 312 amendments is tantamount to a finding that no inequitable conduct occurred.

Instead, more recent case law makes clear that if a party commits inequitable conduct which the PTO fails to discover, the PTO's failure does not absolve the inequitable conduct. In *Kangaroos U.S.A., Inc. v. Caldor, Inc.*, 778 F.2d 1571, 1576 (Fed. Cir. 1985), the patent prosecutor made a clearly improper claim that a second patent application was entitled to the benefit of the filing date of a first patent application. The district court held that this improper claim constituted inequitable conduct. On appeal, the patent prosecutor contended that because the PTO failed to check the improper claim the patent prosecutor did not commit inequitable conduct. The court held that if the patent prosecutor's actions constituted inequitable conduct, "lapse on the part of the examiner does not excuse the applicant." *Id.*

In *Rohm & Haas*, the district court found the patent prosecutor did not commit inequitable conduct, despite the prosecutor's falsification of affidavits during the application process, because subsequent affidavits the prosecutor presented the examiner informed the examiner of facts from which the examiner could have discovered the falsity of the prior affidavits. The Federal Circuit reversed, holding that this cure was inadequate as a matter of law. 722 F.2d at 1573. The prosecutor could not take solace in the examiner's acceptance of a second group of affidavits and subsequent patent allowance. Such acceptance did not absolve the prosecutor's inequitable conduct. *See id.* at 1572-73.

Likewise, the PTO's acceptance of the Rule 312 amendments does not absolve Sycor of the intentional misrepresentations that it made in applying for the amendments. The law is clear that when a patent applicant commits inequitable conduct, a "lapse on the part of the examiner does not excuse the applicant." *Kangaroos*, 778 F.2d at 1576.

-e-

Having determined that the misrepresentations were material and that Sycor acted intentionally, the court next balances the materiality of the misrepresentations with Sycor's intent to determine "whether the scales tilt to a conclusion that 'inequitable conduct' occurred."

See In re Jerabek, 789 F.2d at 890. Balancing materiality and intent, both of which the court finds to exist in high measure, the court concludes Sycor committed inequitable conduct by its intentional misrepresentation of the nature of the five amendments. The '375 patent is therefore unenforceable. *See J. P. Stevens*, 747 F.2d at 1561 (once court concludes that inequitable conduct occurred, all the claims are unenforceable).

-9-

Datapoint contends Sycor committed inequitable conduct in submitting certain January 25, 1971 amendments in response to the examiner's rejection of the '375 application. The court disagrees.

On September 22, 1970, the PTO rejected the '375 patent application for several reasons pursuant to 35 U.S.C. § 112. First, the PTO concluded that Sycor had failed to give sufficient structural detail to enable one skilled in the art to make and use the invention. Second, the PTO found that the application did not set forth the best mode contemplated by the '375 invention. Third, the PTO rejected the application based upon inadequate disclosure.

On January 25, 1971, Sycor submitted an amendment to the specification, which stated:

> It may be observed in studying the foregoing specification that the same has not been burdened bythe inclusion of large amounts of detailed and specific information relative to such matters as circuitry, memory structure, logic and timing, instruction sets, and the like, *since all such information is basically well within the skill of the art as of the present date*. Examples of technical publications already in existence and relating to such aspects are set forth hereinafter, with the basic technical information set forth in each incorporated by reference. U.S. Pat. No. 3,389,404 issued to Robert A. Koster, U.S. Pat. No. 3,406,371, issued to Amdahl et al.; Technical Memorandum ESL-TM-167 dated March 1963, by Robert H. Stotz; Technical Note by Robert H. Kostner in the Sixth National Symposium Information Display, Sept. 29, 1965; Technical Memorandum by Thomas H. Tach, proceedings of the Thirty-Second National Symposium on Information Display, February 1964.

(PX 1, col. 11, 1. 48-66). (Emphasis added). Along with this amendment Sycor submitted a nine-page statement concerning the reasons for the amendment and Sycor's position concerning why the '375 patent should be allowed. Sycor stated:

> As suggested by the Examiner, applicant has amended the specification to incorporate by reference a number of technical publications in existence prior to the filing date of this application, in order to meet the rejection under Section 112 and have the same withdrawn. In this connection, the Examiner has stated that in his view the specification should include,. or incorporate by reference, additional structural details or information particularly concerning the read-only memory, the dedicated latches, and the control logic, including such matters as details relative to the logic and timing, time-sharing details, control details, and the like. In order to make every effort to comply with the requirements set forth by the Examiner, regardless of whether applicant agrees or disagrees with the same, applicant has included in the specification a reference to a number of technical publications which are replete with the type of information regarded by the Examiner as being so necessary in this application, *all of which must certainly be regarded as known to one skilled in the art.*

(PX 2 at 46-47). (Emphasis added). Sycor disagreed with the PTO examiner's prior rejection, concluding that one skilled in the art could build the '375 invention based on the original specification:

> Applicant disagrees totally with the Examiner as to the necessity of including the elaborately detailed information demanded in the preceding Office Action. The invention toward which this application is directed is conceptual in nature, involving the use of generally known types of elements or equipment, whose use is well within the skill of the art, in the particular architectural or systems concepts on which this data entry terminal is based

(PX 2 at 48).

Datapoint contends Sycor committed inequitable conduct by submitting amendments that were not responsive to the PTO examiner's rejection. Datapoint posits that the amendments neither provided sufficient structural detail to permit one skilled in the art to use the invention nor set forth the best mode Sycor contemplated. Datapoint further contends the amendments contained information not disclosed in the '375 patent's claims or specification and that NTI misrepresented the information in the amendments. In response, NTI argues that the amendments were not intended to provide sufficient structural detail to build the device but were instead submitted as evidence that the disclosure of structural detail was not necessary because such detail was well known in the art.

The court agrees with NTI that the evidence indicates that the January 25, 1971 amendment was appropriately characterized to the PTO examiner as an explanation of the level of skill in the art. Sycor did not represent to the PTO that these January 25, 1971 amendments were intended fully to disclose the device; instead, Sycor clearly represented that the amendments were to show the level of skill in the art. The court holds that Datapoint has not proven inequitable conduct by clear and convincing evidence.

-10-

Datapoint contends Sycor committed inequitable conduct in submitting a certain August 31, 1972 amendment to the PTO. The court disagrees.

On May 1, 1972, the PTO rejected the '375 patent application for the fifth time, determining the specification to be inadequate because it lacked sufficient structural detail to enable one skilled in the art to make and use the invention and because the specification did not contain sufficient detail to show the best mode contemplated. On August 31, 1972, Sycor amended the specification to state:

> Inasmuch as the foregoing specification is directed toward those skilled in, and fully conversant with, the art pertaining to the subject matter of this invention, the specification has not been unduly burdened with the inclusion of unnecessarily detailed descriptions of things already well known to those skilled in the art as of the filing date. To whatever extent it may be deemed desirable, however, those desiring to do so may refer further to previous patents and publications which show techniques or apparatus for the practice or implementation of different parts of the novel combination described and claimed

herein, as follows.

(PX 1 at col. 12, l. 1-12). The amendment then referred to 19 different patents and technical publications with a short description of how each might be helpful in explaining the prior art and building the '375 device. In the short remarks accompanying the amendment, Sycor stated that the amendment was made in the manner suggested by the examiner although it was Sycor's "complete conviction that such an amendment should not be necessary under the applicable statutory and case law." Sycor asserted that it made the amendment "merely as the most convenient expedient for obtaining allowance of this case." Sycor also averred that the "Amendment clearly does not constitute new matter since the various concepts, principles and hardware discussed in the prior art patents and publications are discussed specifically in this application as filed and *were common knowledge to those of ordinary skill in the art at the time of filing this application.*" (PX 2 at 126). (Emphasis added).

Datapoint contends Sycor committed inequitable conduct because the amendment was not responsive to the PTO's rejection in that it did not provide sufficient structural detail to enable one skilled in the art to make and use the invention or to show the best mode contemplated. Datapoint also contends that the additional technical publications, textbooks, and patents referred to in the amendment contained new matter not disclosed in original claims and specification and were thus misrepresented.

The court rejects Datapoint's contentions. The face of the amendment, as well as the context in which it was made, make clear that the amendment was not represented as an attempt fully to disclose the structural detail or the best mode contemplated to build the '375 device. Neither was the amendment an addition to the patent's substantive matter and so could not constitute new matter. The evidence indicates that the August 31, 1972 amendment was appropriately characterized to the PTO examiner as an explanation of the level of skill in the relevant art. Datapoint has not proven inequitable conduct by clear and convincing evidence.

-11-

Datapoint contends Sycor committed inequitable conduct by not disclosing to the PTO examiner the existence of U.S. Patent No.

3,308,438 ("the Spergal patent"). Datapoint admits that the Spergal patent is mentioned in the '375 patent, which states:

> U.S. Patent 3,308,438 shows data display by use of a CRT which may be used in practicing the present invention and this patent also shows the use of a core memory, as well as shift registers, laches, a keyboard, and buffer memories, all of which are used in the present invention.

(PX 1, col. 12, 1. 29-34). Datapoint contends that this statement is misleading because the Spergal patent actually discloses much more than the general information stated in the '375 patent. Datapoint also contends that the Spergal patent anticipates claim 29 and that Sycor hid the importance of the Spergal patent by concealing it under a number of other patents in the '375 specification.

The court holds *infra* at § 11(E) (15) that the Spergal patent does not anticipate claim 29. The court finds here that Datapoint has failed to show by clear and convincing evidence that Sycor committed inequitable conduct in reference to the Spergal patent. Datapoint has failed to make even a threshold showing that the Spergal patent was either material to the '375 patent or that Sycor exhibited a mentally-culpable state of mind in making the single disclosure concerning the Spergal patent.

-12-

Datapoint contends that Sycor's failure to disclose the SDS Magpak, a magnetic tape cartridge system, constituted inequitable conduct rendering the '375 patent unenforceable. The court disagrees.

In the 1960's, while a director of SDS, Irwin became familiar with the use of the SDS Magpak magnetic tape system as an input/output device connected to the SDS 910, 920, and 930 data entry systems. The Magpak system used two magnetic tape cartridges. (DX 2330). SDS began selling the Magpak after Irwin left SDS. Irwin admitted knowing about the Magpak and he was able, at trial, to recall some of the Magpak's functional details. (Tr. 41:68).

Datapoint contends the Magpak was an example of the early use of cassette-type peripherals in conjunction with computers and thus was material to consideration of the '375 patent. Datapoint reasons that Sycor committed inequitable conduct when it failed to disclose the device.

NTI responds that there is no evidence in the record to indicate that the SDS computers and Magpak were ever used as data entry systems and that Datapoint presented no evidence that the computers had appropriate software to so function. NTI further contends that the SDS magnetic tape cartridges were not Philips cassettes and so did not have the Philips cassette's high degree of "user friendliness." Because the Magpak did not use a Philips cassette, NTI contends, the Magpak was not material to the '375 patent application. NTI also posits that Sycor's advising the PTO of the Magpak's existence would have provided only cumulative information of another non-cassette magnetic mass storage medium for digital data. NTI further contends that there is no evidence in the record that either the '375 inventors or their patent attorney had a culpable state of mind in not revealing the existence of the Magpak.

The court holds that Datapoint has not satisfied by clear and convincing evidence the materiality and intent requirements for inequitable conduct with respect to the Magpak. Regarding materiality, Datapoint failed to show that there is a substantial likelihood that a reasonable PTO examiner would have considered the Magpak important in deciding whether to allow the '375 application to issue as a patent. *See J. P. Stevens*, 747 F.2d at 1559. Datapoint has not refuted, by clear and convincing evidence, NTI's contentions that the Magpak was not used as a data entry system or that the Philips cassettes were more "user friendly" than Magpak cartridges.

Similarly, Datapoint has not adequately rebutted NTI's contention that disclosing the Magpak would simply have provided cumulative information as to another non-Philips cassette magnetic mass storage medium. The '375 patent discloses two other patents, U.S. Pat. No. 2,918,658 and U.S. Pat. No. 3,447,134, and one article, "Magnetic Data Recording Theory: Head Design" by A. S. Hoagland (Trans. AM. INST. ELEC. ENGRS. Vol. 75 part 1, November 1965), which generally focus upon magnetic tape data recordings. A prior art reference that is merely cumulative is not material. *J. P. Stevens*, 747 F.2d at 1559-60; *Kimberly-Clark*, 745 F.2d at 1455-1456. Datapoint has not satisfied the court that the Magpak was not merely cumulative of the disclosed patents and article.

Given the low level of materiality, Datapoint must have proved that Sycor had a high level of mental culpability in not disclosing the

SDS Magpak. This Datapoint did not do.

Datapoint could have demonstrated Sycor's mental culpability in two ways: first, by introducing direct evidence of Sycor's mental culpability; and, second, by proving that Sycor's nondisclosure benefited Sycor.[13] The record is devoid of direct evidence, and Datapoint has not shown that Sycor's nondisclosure of the Magpak naturally benefited Sycor. Datapoint has not proven inequitable conduct by clear and convincing evidence.

-13-

On January 21, 1972, in response to a PTO rejection for § 112 inadequate disclosure, Sycor filed affidavits prepared by Guillermo Diaz, Raymond P. Kavlick ("Kavlick"), and Norman R. Scott. In these affidavits the affiants represented that, if an engineer normally skilled in the art examined the '375 application, he would be able to build the '375 device. Kavlick further represented that a machine embodying the '375 application had in fact been built.

Datapoint contends that Sycor committed inequitable conduct in filing the three affidavits because it was not able to reduce the invention to practice as of June 13, 1969. Datapoint argues that, when Sycor filed the '375 application, Sycor had not implemented an off-the-shelf audio tape cassette recorder. Datapoint also asserts that Sycor had not implemented a device incorporating a central logic unit containing peripheral control logic as claimed in the '375 patent application. Datapoint argues further that Sycor never reduced to practice such a central logic unit and that any reduction to practice of the recorder/reproducer required more than ordinary skill because it required knowledge of the four Sycor cassette patent applications.

---

[13] *See Kansas Jack, Inc. v. Kuhn*, 719 F.2d 1144, 1151 (Fed. Cir. 1983):

> The intent element of fraud, however, may be proven by a showing of acts the natural consequences of which are presumably intended by the actor. Statements made with gross negligence as to their truth may establish such intent. The duty of candor owed the PTO being uncompromising, it would deal a deathblow to that duty if direct proof of wrongful intent were required. At the same time, that something thought to be true when stated, or a piece of prior art thought unimportant to the PTO's decisions, was later determined to have been true or important will not automatically and alone establish that fraud or inequitable conduct occurred. The fact finder must evaluate all the facts and circumstances in each case.

-a-

The court rejects Datapoint's contention that Sycor had not implemented an off-the-shelf audio tape cassette recorder[14] when it filed the patent application. By March 1969, Sycor had shipped to Olivetti machines fitting the '375 application's specification which contained CRR-1B cassette recorder/reproducers as disclosed in the '375 application. The affidavits, therefore, were not false.

In the 35 U.S.C. § 102(b) context, the Federal Circuit has held that reduction to practice requires only that an invention be "sufficiently tested to demonstrate it will work for its intended purpose" and does not require it to "be in a commercially satisfactory stage of development." *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd.*, 731 F.2d 831, 838 (Fed. Cir. 1984). Datapoint has not proven that Sycor failed to meet this standard.

-b-

Datapoint also contends NTI never implemented or reduced to practice a device incorporating a central logic unit embodying peripheral control logic and thus any reduction to practice of the recorder/reproducer required more than ordinary skill because it required knowledge of the four Sycor cassette tape patent applications.[15]

In support of its position that Sycor never implemented or reduced to practice a '375 machine with "substantially all of the control logic" in the central logic unit, Datapoint relies upon the testimony of Robert Sigal ("Sigal"), Edward Zimmer ("Zimmer"), and Kavlick. These witnesses testified that the original concept was to put all the control logic, including the logic which allowed the peripherals to function as peripherals, in the central logic unit. They further testified that the Sycor engineers realized they could not make a central logic unit powerful enough to contain all this control logic. Instead, the Sycor engineers decided to take the control logic which allowed the peripherals to function as peripherals out of the central logic unit and put it back into the peripherals. (Zimmer, Tr. 37:35-36; Sigal, Tr. 38:176-186). Datapoint contends that, because Sycor took the control logic which allowed the peripherals to function as peripherals out of the central logic unit and put it into the peripherals, Sycor never built a '375 machine containing a central logic unit embodying substantially all the control logic.

---

[14] Datapoint's argument appears to focus upon the cassette recorder/reproducer as a unit rather than upon the digital data recording tape used in the unit. The court has held *supra* at § II(A)(1) that Datapoint has not proven by clear and convincing evidence that Sycor committed inequitable conduct by failing to disclose the four Sycor cassette patents. The court holds *infra* at § II(C) (1) that Datapoint did not prove that Sycor failed to disclose the best mode by failing to disclose the cassette patents. The court does hold *infra* at § II(C) (3), however, that Sycor failed to disclose the best mode contemplated for the digital data recording tape itself (as opposed to Philips cartridges). This last holding is not inconsistent with rejecting Datapoint's contention here, however, because the court does not understand the present assertion to focus upon the data recording tape itself.

[15] Because the court rejects *infra* at § II(C) (1) the best mode argument regarding the four cassette patents, the court rejects without discussion the contention as presented in the form of an inadequate disclosure argument.

NTI responds that the Sycor device did have a central logic unit which embodied "substantially all of the control logic" if one correctly defines the term "control logic" as used in the patent. According to NTI, "control logic" is the logic that instructs the peripherals what instructions to execute rather than how to execute them. NTI contends the Sycor machine's central logic unit had the logic to instruct the peripherals what to do, although each peripheral had its own logic to know how to carry out the command.

In construing the meaning of "control logic" as used in the '375 patent, the court considers the language of the claims, the patent specification, other claims of the patent, the prosecution history, and expert testimony. *Rite-Hite Corp. v. Kelley Co.. Inc.*, 819 F.2d 1120, 1123 (Fed. Cir. 1987). The court concludes from this evidence that "control logic" is not the logic that actually operates the peripherals, but is instead the logic that instructs the peripherals to function at a given point in time in accordance with the particular peripheral's pre-established capability.

Claim 1 of the '375 patent shows that it incorporates the "what to do definition of "control logic." Before claim 1 describes a "central logic unit embodying substantially all of the control logic for said entry means and display means," the claim describes "a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof." Thus the claim itself indicates that the keyboard will have sufficient internal logic to function as a keyboard. Claim 1 further describes "an optical display means for visual character read-out of such data." Claim 1 therefore indicates that the optical display will have sufficient internal logic to function as an optical display.

Furthermore, the patent specification indicates that the keyboard and optical display peripherals should have sufficient internal logic to function as keyboard or optical display peripherals. (*See* PX 1, col. 4, l. 46-52; col. 5, l. 19-27; col. 7, l. 18-46; col. 9, l. 49 to col. 10, l. 22).

In addition, the trial evidence makes clear that, several months before Sycor applied for the patent, it abandoned its attempts to put the "how to" logic in the central logic unit. Instead, Sycor decided to place this logic in the peripherals. Datapoint has not convinced the court that, at the time Sycor applied for the patent, it intended a definition of "control logic" that varied from what it was practicing.

Because the three affidavits do not misrepresent the control logic residing in the central logic unit, the court holds that Sycor did not commit inequitable conduct by filing the January 21, 1972 affidavits.

-14-

Datapoint argues that Sycor improperly injected "new matter" in the '375 patent application in two amendments submitted in response to PTO office actions dated September 22, 1970 and May 1, 1972. The court disagrees.

In response to the PTO's September 22, 1970 rejection for inadequate disclosure and failure to set forth the best mode, Sycor submitted the following specification amendment:

> It may be observed in studying the foregoing specifications that the same has not been burdened by the inclusion of large amounts of detailed and specific information relative to such matters as circuitry, memory structure, logic and timing, instruction sets, and the like, since all such information is basically well within the skill of the art as of the present date. Examples of technical publications already in existence and relating to such aspects are set forth hereinafter with the basic technical information set forth in each incorporated by reference. U.S.

> Pat. No. 3,389,404 issued to Robert A. Koster; U.S. Pat. No. 3,406,371, issued to Amdahl et al.; Technical Memorandum ESL-TM-167 dated March 1963, by Robert H. Stotz; Technical Note by Robert H. Kostner in the Sixth National Symposium Information Display, Sept. 29, 1965; Technical Memorandum by Thomas H. Tach, Proceedings of the Thirty-Second National Symposium on Information Display, February 1964.

(PX 1, col. 11, 1. 48-66). As evidenced by the PTO's second rejection on February 26, 1971, this amendment did not satisfy the examiner's objections.

On May 1, 1972, the PTO rejected the '375 application a fifth time because the specification lacked sufficient structural detail to allow one skilled in the art to make and use the invention and because the specification did not contain sufficient detail to show the best mode contemplated. In response to this rejection, Sycor amended the specification to state:

> Inasmuch as the foregoing specification is directed toward those skilled in, and fully conversant with, the art pertaining to the subject matter of this invention, the specification has not been unduly burdened with the inclusion of unnecessarily detailed descriptions of things already well known to those skilled in the art as of the filing date. To whatever extent it is deemed desirable, however, those desiring to do so may refer further to previous patents and publications which show techniques or apparatus for the practice or implementation of different parts of the novel combination described and claimed herein, as follows.

(PX 1, col. 12, 1. 1). The amendment then referred to 19 different patents and technical publications with a short description of how each might be helpful in explaining the prior art and building the '375 machine.

Datapoint contends these two amendments injected "new matter" into the '375 patent application and the court may either (1) strike the new matter amendments from the '375 patent and reject the '375 patent for inadequate disclosure, or (2) allow the new matter amendments to remain and hold that NTI is estopped to assert a filing date for the '375 patent earlier than the dates that Sycor submitted these new matter amendments. Because the court holds that the amendments do not constitute new matter, the court declines to take either option.

Patent law specifically forbids the introduction of new matter by amendment into the invention disclosure. 35 U.S.C. § 132. The applicable PTO regulations state:

> No amendment shall introduce new matter into the disclosure of an application after the filing date of the application (§ 1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application. *Matter not found in either, involving a departure from or an addition to the application after its filing date* even though supported by an oath or declaration in accordance with § 1.63 or § 1.67 filed after the filing date of the application.

37 C.F.R. § 1.118(a) (1987). (Emphasis added). Thus the PTO defines "new matter" as any matter which departs from or is an addition to the original disclosure. *See Stearn v. Superior Distributing Co.*, 674 F.2d 539, 544 (6th Cir. 1982).

Datapoint has not shown by clear and convincing evidence that these amendments were departures from or additions to the original disclosure. The amendments simply outlined the state of the prior art at the filing date. While it is true that the cited patents were different in many respects from the '375 invention, Sycor did not rely upon these differences to expand or change the invention. The amendments did only what they were represented to do, explain the state of the prior art.

B.

Datapoint next seeks to invalidate the '375 patent on the ground that Sycor did not, as required by 35 U.S.C. § 112, "particularly point out and distinctly claim the subject matter which the applicant regards as his invention."

The applicant's duty to distinctly claim the invention is separate from the applicant's duty to set forth the invention in such full, clear, concise and exact terms to enable one skilled in the art to build the invention. *Rengo Co. Ltd. v. Molins Machine Co., Inc.*, 657 F.2d 535, 550 (3d Cir.), *cert. denied*, 454 U.S. 1055 (1981). The distinctive claiming requirement is not to enable others to build the device but is instead to inform the public of the extent of the monopoly obtained by the patent owner. *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 28, 232 (1942). Datapoint's briefing does not persuade the court to find by clear and convincing evidence that Sycor failed to satisfy § 112. Datapoint advances only enablement arguments rather than distinctive claiming arguments and has not met its burden of proof.

C.

Datapoint advances various best mode arguments in support of its invalidity theories.

-1-

Datapoint contends Sycor concealed the best mode contemplated concerning the cassette tape drive mechanism because the patent specification discloses *capstan* cassette drive technology and Sycor had, in four other patents, evidenced its preference for *spindle* cassette drive digital technology. NTI responds that when Sycor filed for the '375 patent, Sycor actually contemplated the *capstan* cassette drive as the best technology to implement the '375 invention and therefore the earlier patents are irrelevant.

Patent law requires that "[t]he specification ... shall set forth the best mode contemplated by the inventor of carrying out his invention." 35 U.S.C. § 112. "Not complying with the best mode requirement amounts to concealing the preferred mode contemplated by the applicant at the time of filing." *DeGeorge v. Bernier*, 768 F.2d 1318, 1324 (Fed. Cir. 1985). The purpose of the best mode requirement is to prevent an inventor from receiving patent protection while at the same time concealing from the public what the inventor in fact considers to be the preferred embodiment of his invention. "Compliance with the best mode requirement exists when an inventor discloses his preferred embodiment." *Id.* at 1324-1325.

In interpreting the best mode requirement the courts have emphasized the inventor's duty to disclose the best mode he contemplates when he applies for a patent. The courts have not required that the inventor disclose the optimum mode; the existence of a better mode than the mode disclosed does not invalidate the patent if the inventor did not know or appreciate it as the best mode. "Instead the thrust of the decisions in this area has been to require that the inventor act in good faith with no attempt to conceal what he feels is the best method of using the invention." *Studiengesellschaft Kohle mbH v. Eastman Kodak Co.*, 616 F.2d 1315, 1340 (5th Cir.), *cert. denied*, 449 U.S. 1014 (1980). Datapoint has failed to produce clear and convincing evidence that Sycor actually considered these four prior patents as the best mode of implementing the cassette tape drive aspect of the '375 invention. That Sycor represented in the four prior patent applications that the patents were excellent technologies for digital information recording does not, without more, meet Datapoint's burden.

-2-

Datapoint next contends Sycor failed to disclose the best mode Sycor contemplated for programming the '375 device because the '375 specification was fatally vague in describing the programs to be used in the device. Datapoint's argument is properly considered *infra* at § II(D) where, under inadequate disclosure, the court holds that Sycor failed to enable one reasonably skilled in the art of computer programming to program the computer. Datapoint has failed to produce clear and convincing evidence that Sycor contemplated a better mode of programming the '375 machine than that disclosed in the '375 specification.

-3-

Datapoint contends that Sycor failed to disclose the best mode for recording digital information when it applied for the patent. In the '375 patent specification Sycor stated:

> The tape cassettes 18 are illustrated in more detail in FIG. 4, from which it will be apparent that these components are of the type which are *almost universally available for audio purposes*, comprising a flat, compact, basically rectangular case or housing (conventionally of plastic) enclosing several hundred feet of magnetic recording tape which is nominally 0.15 inches wide.

(PX 1, col. 3, l. 30-37). (Emphasis added). The specification also states:

> As is known, cassette-type tape magazines are commonly available with 280 feet, 420 feet, or 560 feet of relatively narrow (about 0.15 inches) completely-enclosed magnetic recording

tape.....

(PX 1, col. 7, l. 57-61). Datapoint contends Sycor attempted to use standard Philips audio magnetic cassette tapes for digital recording and failed, that extensive experimentation was required to determine the alterations necessary to adapt the audio cassettes for digital recording, that Sycor prepared a specification for magnetic tape cassettes to be used in purchasing cassettes for use with the '375 machine, and that the Sycor specification differed substantially from the standard audio cassette specification. Datapoint contends that Sycor knew at the time of filing the '375 patent application that this cassette specification was needed to practice the best mode of the purported inventions embodied in claims 19-23 and 24-28. Datapoint finally contends that, as a matter of law, the '375 patent is invalid because Sycor concealed the best mode Sycor contemplated of practicing the claimed inventions of claims 19-23 and 24-28.

The court finds from clear and convincing evidence that Sycor did not disclose the best mode of carrying out the '375 invention when it specified the use of standard audio tape and knew the actual tape needed to record and reproduce digital data was substantially different from such tape. In this respect the court credits the testimony of Sigal and Magleby that Sycor was not using standard audio tape and knew, in advance of the patent application date, that standard tape was not the best mode for recording and reproducing data.

Accordingly, the court concludes that independent claims 19 and 24 and their dependencies are rendered invalid by virtue of Sycor's failure to disclose the best mode.

D.

Datapoint contends the patent in suit is invalid because the '375 specification inadequately discloses the invention's program, instruction set, cassette, cassette recorder/reproducer, central logic unit, display controller, interfacing logic, and timing and circuitry. Datapoint also asserts that the '375 specification contains 18 vague and ambiguous terms that are not adequately defined in the patent specification and that have no generally accepted meaning to those skilled in the art. The court finds from the clear and convincing evidence that the patent specification inadequately discloses the program of the '375 device, thus rendering the patent non-enabling and invalid.[16]

35 U.S.C. § 112 requires that a patent shall enable one skilled in the art to make and use the patentee's invention. Section 112 provides, in pertinent part:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same......

Id. Enablement is a legal issue. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960 n.6 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984). The question is whether the disclosure is sufficient to enable those skilled in the art to practice the claimed invention. *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463 (Fed. Cir. 1984). A patent may be enabling, of course, even if some experimentation by the user is necessary. *W. L. Gore & Assoc., Inc. v. Garlock. Inc.*, 721 F.2d 1540, 1557 (Fed. Cir. 1983), *cert. denied,* 469 U.S. 851 (1984). The degree of experimentation necessary for one skilled in the art to practice the invention may not be undue. *Id.* The determination date for deciding enablement is the date the patent application is filed. *W. L. Gore*, 721 F.2d at 1556.

Computer programming is done in computer language, which "is not a conjuration of some black art," but is instead "simply a highly structured language." *Matter of Application of Sherwood*, 613 F.2d 809, 817 n.6 (C.C.P.A. 1980), *cert. denied sub. nom. Diamond v. Sherwood*, 450 U.S. 994 (1981). That which is necessary to render a computer program specification enabling varies according to the particular facts.

> In general, writing a computer program may be a task requiring the most sublime of the inventive faculty or it may require only the droning use of clerical skill. The difference between the two extremes lies in the creation of mathematical methodology to bridge the gap between the information one starts with ("the input") and the information that is desired ("the output").

---

[16] The court therefore need not reach the other inadequate disclosure arguments.

Id. at 816.

In the instant case the parties have presented conflicting expert testimony regarding whether one skilled in the art would be able to write the programs needed to practice the '375 invention. The court has chosen from among the testimony presented, finding to be persuasive and credible the testimony of Wesley A. Clark ("Clark") and Magleby. Their testimony demonstrates by clear and convincing evidence that the patent specification's lack of any information concerning the invention's programs would require a person reasonably skilled in the art of computer programming to experiment unduly in attempting to write programs for the '375 device.

By way of example, the court credits Magleby's testimony that one skilled in the art of computer programming would be hindered because he could not discern where the program format would be loaded, what would be a typical program format, what characters would be used, or what would be the range or limitations of the format program. (Magleby, Tr. 44:116-132). The court credits Clark's testimony that the '375 specification does not set out either the '375 machine's job or the needed instruction set. The court likewise agrees with Magleby's testimony that the '375 specification's general lack of technical information concerning the device's programs would cause one skilled in the computer programming art and attempting to build a '375 machine to experiment unduly.

Section 112 inadequate disclosure invalidity extends only to claims that involve the matter inadequately disclosed, 35 U.S.C. § 288. In the instant case, the inadequate program disclosure invalidates four of Sycor's independent claims. Independent claims 1 and 40 both claim programs as part of the inventions. Independent Claims 19 and 29, while not specifically mentioning programs, do speak of intricate computer activities for which the need of a computer program is implicit. The court holds that Sycor's failure adequately to disclose the programs involved in the '375 patent infects these independent claims and their dependencies, rendering them invalid.

No. 90-326 ②

Supreme Court, U.S.
FILED
AUG 21 1990
JOSEPH F. SPANIOL, JR.
CLERK

IN THE

Supreme Court of the United States

October Term, 1989

DATAPOINT CORPORATION,

Petitioner,

vs.

NORTHERN TELECOM, INC.,

Respondent.

APPENDIX (PART TWO) TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Jerry R. Selinger
Counsel of Record

500 Trammell Crow Center
2001 Ross Avenue
Dallas, Texas 75201-2916
214/220-8200

ATTORNEY FOR PETITIONER

OF COUNSEL:

Martha E. Waters
500 Trammell Crow Center
2001 Ross Avenue
Dallas, Texas 75201-2916
214/220-8200

118 pp

E.

The court next considers Datapoint's allegations that various prior art anticipates the '375 invention.

In order for a patent to be held invalid for anticipation, the party challenging the patent must show by clear and convincing evidence that "a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention," *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir.), *cert. dism'd sub nom. Hazeltine Corp. v. RCA Corp.*, 468 U.S. 1228 (1984), or that the claimed invention was known or embodied in a single prior art reference, device, or process. *Studiengesellschaft Kohle, M.B.H. v. Dart Industries, Inc.*, 726 F.2d 724, 726-27 (Fed. Cir. 1984). All elements of the claimed invention must be contained in a single prior art disclosure and must be arranged in the prior art disclosure as in the claimed invention. *Structural Rubber Products Co. v. Park Rubber Co.*, 749 F.2d 707, 716 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). The claims of the invention must "read on" disclosures in the prior art reference; that is, all limitations of the claim must be found in the reference, or "fully met" by it. *Kalman v. Kimberly-Clark*, 713 F.2d 760, 772 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 (1984), *overruled in part on other grounds, SRI International v. Matsushita Electric Corp. of America*, 775 F.2d 1107, 1125 (Fed. Cir. 1985) (en banc); *see also Lewmar Marine, Inc. v. Barient, Inc.*, 827 F.2d 744, 747 (Fed. Cir. 1987), *cert. denied*, ___ U.S. ___, 108 S.Ct. 702 (1988) ("That which would *literally* infringe if later in time anticipates if earlier than the date of invention.") (emphasis in original). In order for a prior art reference to anticipate the claimed invention, the prior art reference must identically disclose the claimed invention; if there are differences between the inventions, invalidity should be determined under principles of obviousness, not anticipation. *See Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 780 (Fed. Cir. 1985).

To decide whether anticipation exists, the court must identify the elements of the claims in the patent in suit, determine the meaning of the elements in light of the patent specification and prosecution history[17], and identify corresponding elements disclosed in the allegedly anticipatory reference. *Lindemann*, 730 F.2d at 1458.

-1-

The court first considers whether the LINC computer anticipates claims 1, 40, and 29 of the '375 patent.

The LINC (Laboratory Instrument Computer) was a stored program computer designed for use in laboratory environments. (DX 120 at 10-05684). It consisted basically of a keyboard for entry of data and commands to the computer, an electronics cabinet, an oscilloscope information-display, and reel-to-reel digital magnetic tape units used for storing computer programs and data. (*Id.* at 10-05683 to -05685). The LINC was capable of running various programs. Datapoint presented evidence concerning LINC's execution of the LAP6, an on-line program used for preparation of other LINC programs and for text editing (DX 121) and the Patient Interview ("PI") program, a medical data collection program run with the LAP6 or its predecessor program. (Tr. 46:58-59). It is undisputed that the LINC was described in printed publications, was in public use, and was on sale more than one year prior to the date of filing of the '375 patent application. Thus the LINC is prior art for purposes of 35 U.S.C. § 102(b) anticipation.

Claim 1 of the '375 patent claims a source data entry terminal device comprising several elements, including a microprocessor that includes a fixed-program read-only memory. A read-only memory (sometimes referred to in this opinion as "ROM") means computer memory that can only provide a read function, that is, the memory cannot be written to.[18] The evidence was not clear and convincing that the LINC used read-only memory; in fact, the evidence was to the contrary. (*See* Tr. 52:34, 67). Accordingly, each and every element of '375 claim 1 is not in the LINC prior art reference, and LINC does not anticipate claim 1.

Claim 40 of the '375 patent claims a method of implementing a source data entry terminal. An element or step of that claim is dedicating the terminal to a given operational configuration by incorporating a fixed program in the terminal's central processor. It is virtually undisputed that a "fixed program" is a software program that cannot be altered by the operator of the device running the program[19] and that does not alter itself during execution; that is, it is a program that could run out of read only memory hardware. The evidence presented demonstrates that the LINC did not operate with a fixed program when running the LAP6 software. (Tr. 65:30, 110-11; 66:8).[20] Likewise, the evidence was not clear and convincing that the PI program was a fixed program since that program ran using the LAP6 or one of its predecessors.[21] Accordingly, LINC does not anticipate '375 claim 40 since the fixed program dedication element of claim 40 is lacking in the LINC.

---

[17] The meaning of the elements should not, however, be determined in light of the allegedly anticipatory reference. *Cf. SRI International v. Matsushita Electric Corp. of America, 775* F.2d 1107, 1118 (Fed. Cir. 1985) (en banc) (infringement case).

[18] The term ROM is defined *infra* at § IV (C) (1).

Datapoint also alleges that the LINC anticipates claim 29. Claim 29 is a method of source data capture[22] comprising the steps of (1) generating coded signals representative of alphanumeric data, (2) visually displaying the data by the use of the signals, (3) using a buffer memory to store temporarily the data being displayed, and (4) recording the data on magnetic tape after the data has been visually displayed. The court finds that the LINC generates data-representative signals and uses those signals to display the data visually on the LINC's oscilloscope display in both the LAP6 and PI programs. (DX 120 at 10-05690; DX 121; DX 152 (videotape at counter marks 20-40); Tr. 65:14-15).

As to the third element of using a buffer memory to temporarily store data being displayed, the evidence shows that the LINC used part of its central memory in such a manner. (Tr. 52:68, 65:29-30, 66:18, 123). The LINC buffer was not externally interfaced to a microprocessor, as was the '375 buffer. (Tr. 52:68). The external interface characteristic, however, is not required by claim 29. Even though such a characteristic is present in the specification and in at least claims 3 and 16 (structural claims) such a limitation cannot be read into claim 29 (a method claim). *See D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed. Cir. 1985); *Inpro, Inc. v. A. W. Chesterson Co.*, 657 F.Supp. 935, 943 (N.D. Ill. 1987). Furthermore, the specification does not indicate that the term "buffer memory," as used in claim 29, takes on a meaning limiting it to memory external to the microprocessor. "Buffer memory" means simply a memory used as a queue for data signals. Accordingly, the evidence demonstrates the existence of the "using a buffer memory" element in the LINC.

---

[19] The parties do not dispute that an end-user can replace a fixed program by catastrophic means.

[20] The testimony that is apparently to the contrary (Tr. 52:34) is not convincing, especially in light of other testimony by the same witness.

[21] There was no testimony that the LAP6 predecessors were fixed programs.

[22] With the LAP6 program, data in the form of program or other text was captured. (*See* DX 212). With the PI program, alphanumeric data representative of a patient's medical history was captured. (*See, e.g.*, Tr. 46: 109-10, 114).

The final element of '375 claim 29 is the recording of data on magnetic tape after it has been displayed. Both the LAP6 and PI programs had this capability. (*See* Tr. 46:109-110; DX 120 at 10-05690; DX 121 at 7-8). NTI argues, however, that the recording was not done on a record-by-record basis "as implicit in the recitations of claim 29." The final element of claim 29 contemplates some degree of record-by-record recording since some amount of data must be displayed before being recorded. Both the LAP6 and PI program disclose this; some amount of data is displayed before it is recorded and is recorded after it is displayed. Claim 29 cannot be interpreted in light of the '375 specification to impose any greater restriction on the record-by-record recording step. Accordingly, LINC discloses the final element of claim 29. Because all elements of claim 29 are disclosed by the LINC, LINC anticipates claim 29, whether running the LAP6 or PI program.

Having determined that the LINC anticipates '375 independent claim 29, the court must next determine whether the LINC anticipates dependent claims 30 and 38. Claim 30 of the '375 patent adds to the method of source data capture in claim 29 the step of using a program format to generate data signals in a predetermined relative sequence and displaying the data in such sequence. As to the LINC running the LAP6, Datapoint relies upon two LINC features to meet the claim 30 limitation: (1) the line numbers and line cursor generated on LINC's display to give a label to lines of data entered and to show the last usable spot for data entry on a line on the display (Tr. 65:17-18; DX 121 at 1-3) and (2) the Copy Meta command feature (Tr. 65:18, DX 121 at 15). The line numbers and cursor are not related to causing the generation of data in any particular sequence; the line numbers merely serve as reference labels. (DX 121). The Copy Meta command does not control the entry sequence of data desired to be captured, but rather directs the order of certain commands given the LAP6 program. (Tr. 66:137-40). Thus the LINC running LAP6 does not disclose the limitation of '375 claim 30.

The LINC executing the PI program, however, does disclose the elements of '375 claim 30. The PI program displayed question forms on the LINC display prompting the entry of specific data. (DX 152 (videotape at counter marks 20-40); Tr. 46:15-16). Data was displayed upon entry. (DX 152 (videotape at counter marks 20-40)). Further, the forms came up in a pre-ordered sequence, prompting entry and display of data in that sequence.[23] *Id.* Thus the LINC executing the PI program discloses the elements of '375 claim 30.

Claim 31, dependent upon claim 30, adds the step of displaying format indicia in a predetermined positional relationship to displayed data. The form and instruction display of the PI program provides data format indicia, i.e., it describes the type of data to be entered.[24] Those indicia are displayed in a predetermined (by the program) position relative to the data entered, or to be entered, and displayed. *Id.* Thus the LINC executing the PI program contains the elements of and anticipates '375 claim 31.

---

[23] It might be argued that the PI program typically allows the entry and display of just one data entry at a time and does not display a set of related data treated as a unit (what NTI seems to mean by a data "record") as does the '375 invention. (*See* patent col. 6, l. 15-28). Such an argument, however, does not stand in the face of the fact that the specification describes a device that displays a 200-character data record along with various instructions, field labels, and the like, on a CRT of at least a 310 character display capacity. (*Id.; id.* at col. 7, l. 28-31). On such a device, it is unlikely that all the data entered in a record would be displayed simultaneously, just as in the LINC executing the PI program.

[24] Unlike the '375 device, the appearance of screens on the PI program determines the order of data entry. The '375 device apparently contemplates being able to use a single screen display to tell the type and order of data to be entered. It is not clear that the term "format indicia" must include indicia of both type and order specifically, but rather just data format generally.

There is not clear and convincing evidence that the LINC, executing the PI program, discloses the limitation of dependent claim 32. The evidence is insufficient in addressing whether the program format of the PI program was held in a buffer memory. The court would have to draw unwarranted inferences from the evidence to conclude otherwise.[25] The same is true concerning dependent claim 35.

Dependent claim 38 of the '375 patent adds to the method of claim 29 the steps of searching for a data record on a tape containing multiple records, sets of related data treated as units. The search locates a record by using beginning characters of data in a record and compares those with characters recorded on tape to find corresponding beginning characters. The LINC executing LAP6 does not use data as a search instrument, but rather uses data block/file labels, which are not captured data, to conduct the search. (Tr. 66:158-60; DX 121 at 5-6, 8). There is no evidence whether the PI program on LINC searched the same way or differently. Thus the limitation of claim 38 is not disclosed by the LINC, and claim 38 is not anticipated by the LINC.

In conclusion, the LINC running the LAP6 program anticipates claim 29 of the '375 patent. The LINC executing the PI program anticipates claims 29, 30, and 31 of the '375 patent. The LINC, executing either LAP6 or PI program, does not anticipate either claims 1 or 40 of the '375 patent.

-2-

Datapoint contends the AESOP-B system anticipates claims 1, 29, and 40 of the patent, and their dependencies.

AESOP-B was a data processing system consisting of three sets of keyboards and displays linked to a Sanders control unit, which in turn was connected to a PDP-8 computer termed a "tristation controller."[26] The tristation controller, in turn, was connected to a central computer.

---

[25] There is testimony that everything to be displayed on the LINC is in a buffer used for display character generation (Tr. 65:19) but that evidence is given in the LAP6 context.

[26] The PDP-8 is discussed more fully *infra* at section II(E) (9).

The AESOP-B was a distributed data process system; that is, information from the central computer would be sent to the tristation controller, and that information could then be sent to the Sanders control unit and put in one of its three memories[27] for editing via a keyboard-display set.[28] (DX 2). Edited data could then be sent back up the chain. The keyboard-display sets were controlled by the Sanders unit. Codes generated by the keyboard were sent to the Sanders, which executed the editing or other functions or commands selected via the keyboard. *Id.* DX 2 at 10-07568, -07577, 07605. The Sanders would then control and update the display by sending character and positioning information to the display. *See id.* at 10-07580. Each of the Sanders' memories was a recirculating delay-line memory. (*Id.* at 10-07598). The editing logic was timeshared between the three memories. (*Id.* at 10-07605; Tr. 68:118). The Sanders programs and logic were based in read-only memory. (Tr. 68:117).

The data that was communicated through the various AESOP-B units was the data that was the most likely to be altered by operators. Formats for the data, that is, forms for which the data acted fill in the blanks, were stored in a DASA unit, which was separate from but peripherally connected to the other AESOP-B units.[29] (Tr. 68:133-34). The DASA unit stored the forms on a magnetic belt medium inside of a cartridge. *Id.* The forms could be sent from the DASA to the other units for display along with data.

---

[27] Each memory corresponded to a keyboard-display set.

[28] The tristation controller was a "stored program" device that utilized read-write memory for program storage. This device was more than a mere data communication link between the control computer and the Sanders unit: it could perform processing on the data. The court was not specifically directed to more detailed evidence on the tristation controller, in fact, the AESOP-B expert, Edward Bennett ("Bennett"), could not go into detail on the function of the tristation controllers. (*See* Tr. 69:123-25).

[29] There was a conflict between Bennett's testimony and some of the AESOP-B documentation as to how the DASA unit was connected to the rest of the AESOP-B system. Bennett testified that the DASA unit was connected to the Sanders unit. (Tr. 68:132-34). DX 4 at 10-07530 shows the DASA unit connected to the tristation controller in a version of the AESOP-B that was implemented by 1967, *see* Tr. 69:117-18.

The AESOP-B utilized reel-to-reel tape recorders using 3/4" magnetic tape. (Tr. 63:148). The evidence was not clear as to precisely how these recorders were used, although they were used for data storage of some nature. Bennett testified that a recorder was connected to the Sanders unit and that data could be sent from the Sanders to the recorder or vice-versa. (*See* Tr. 68:134-35). A configuration of the AESOP-B implemented by 1967 shows a tape recorder connected directly to the tristation controller. (DX 4 at 10-07530; *see* Tr. 69:117-18).

Claim 1 of the '375 patent claims a source data entry terminal device comprising various elements including a "means for coupling coded data entered into [the] terminal to a data recorder or reproducer means." It is clear from the '375 patent claims and specification that this data recorder or reproducer means is a means distinct from the terminal's memory and storage registers and buffers. In the preferred embodiment of the invention, the recorder/reproducer means is a cassette tape recorder. The evidence concerning the AESOP-B tape recorders is not clear and convincing that the recorders were used for recording data entered into the AESOP-B, that is, into the Sanders-display subsystem. The recorders could have been for mass storage of data on the PDP-8 tristation controller, such data possibly being entered data or data processed by the PDP-8, or something else. There was also no clear and convincing evidence demonstrating the existence of other means for recording data entered into the system apart from the various aspects of the AESOP-B's memory.

Claim 29 of the '375 patent claims a method of source data capture comprising, *inter alia*, recording data (i.e., data represented by coded signals) on magnetic tape after the data has been displayed. As with claim 1, there was a lack of evidence showing that the tape recorders on the AESOP-B were used for recording data after it was displayed. In fact, there is some question as to the details of the purpose of the recorders. Thus the "recording data on tape" element of claim 29 is not disclosed in the AESOP-B.

Because each and every element of claims 1 and 29 of the '375 patent are not disclosed by the AESOP-B, these claims are not anticipated by the AESOP-B.

An alternative reason that '375 claims 1 and 29 are not anticipated, and the reason claim 40 is not anticipated by AESOP-B, rests upon the nature of the exhibits (DXS 2-5) that NTI relies upon as publications under 35 U.S.C. § 102(b).[30] Section 102(b) denies patentability to an invention described in a printed publication more than one year prior to the date of filing the patent application. For a publication to invalidate a patent the publication must be available to the public to the extent that persons concerned with the subject art, exercising reasonable diligence, could have access to the publication. *In re Wyer*, 655 F.2d 221, 226 (C.C.P.A. 1981) (cited with approval in *Massachusetts Institute of Technology v. AB Fortia*, 774 F.2d 1104, 1109 (Fed. Cir. 1985)). Furthermore, the disclosure in the publication must be enabling, *see In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985), that is, the description must be of such a nature that one of ordinary skill in the art could recognize and comprehend from the publication the essentials of the claimed invention without further experimentation. *Wyer*, 655 F.2d at 226.

Defendant's exhibits 2-5 were prepared as part of a government project. They were distributed to at least 50 commercial and private individuals and companies involved in the project. (Tr. 68:16, 21-22). There was evidence, however, that such distribution may have been made with a restrictive notice on the documents (Tr. 68:17-20) as exemplified by defendant's exhibit 5, which contains the notice that "[r]eproduction or further dissemination [of the document] is not authorized" and that the document "is not for public release." (DX 5 at 10-06766). Defendant's exhibits 2-4 themselves did not contain such a notice, but were of the class of documents that would have been distributed with such a notice. (Tr. 68:16-23). The documents were also contained in a library at the Mitre Corporation, the company developing AESOP-B, and were not classified. (Tr. 68:15). Nevertheless, access to the library was restricted: a pass was needed to get into the building. (Tr. 69:34).

Given the uncertainties of public access to the AESOP-B documents, the court is unable to find that anyone concerned with the art of computer design could have had access to the documents by the exercise of reasonable diligence. Accordingly, Datapoint has failed to show by clear and convincing evidence that defendant's exhibits 2-5 are sufficient as prior publications, descriptive of the AESOP-B, and capable of invalidating claims 1, 29, and 40 of the '375 patent.

---

[30] DX 6 was not offered as a publication. (Tr. 68:28).

-3-

Datapoint asserts that the Programmed Console ("PC") anticipates claims 1, 29, and 40 of the '375 patent. The PC was essentially a stored program computer based on the LINC. Smaller than the LINC, the PC was used for medical applications. It consisted basically of a keyboard for entry of data and parameters, an oscilloscope display, an input channel for entry of analog data, and an input/output channel connected to a Datamaster and telephone modem. (DX 155 at 10-7769). The PC was used, *inter alia*, for radiation treatment planning involving the display of isodose contours.[31] (Tr. 48:111-12, 113-14; DX 162). Data concerning a patient and data related to treatment could be entered from the keyboard and an analog transducer.[32] The data could be displayed on the screen and edited, if necessary,[33] and then sent over telephone lines to a main computer. The main computer returned processed data to the PC for display. (Tr. 48:115-21).

The Datamaster was a magnetic card reading/recording device connected to the PC. The device used cards that contained a nine-inch long strip of magnetic tape and was used for entering programs, and possibly data (Tr. 49:108-09), to the PC. The PC was programmed, data was entered into the PC and transmitted to the main computer, and the processed data was returned to the PC for display. The Datamaster could then be used for recording of processed data on the cards. (Tr. 48:127-29).[34] The PC could also be used in a stand-alone manner, without connection to a main computer. (DX 159). The PC would perform some of its own processing in this mode. The Datamaster in this mode was used for program and certain data entry and for recording processed data. *Id.*

---

[31] Contours of equal radiation dosage. (Tr. 48:111-12). The treatment planning could be external (*i.e.*, pre-treatment) or internal (*i.e.*, while the patient was being treated). (DX 159; Tr. 49:109-110).

[32] The analog input related to the position of radioactive needles implanted in a patient (DX 156; Tr. 49:109-10) and to the outline and significant internal structures of a patient's body (DX 159 at 185).

[33] The PC used a form filling display arrangement much like the LINC Patient Interview Program. (Tr. 48:118-21; DX 162).

[34] At Tr. 60:57 there is testimony that raw data may have been recorded in batch on the cards. The court does not find the testimony clear and convincing that such was the case.

The PC also utilized a program for composing, assembling, running, and debugging programs for the PC. (DX 191 at 1). The program was called the Instantaneous Manuscript Processor ("IMP") and it is described in a monograph dated October 1968. *Id.* The IMP derives its name from the fact that each line of text entered into the PC was tokenized, that is, partially processed or abbreviated, as it was typed in. (*Id.* at 3; Tr. 64:58-59). The entered data was converted into abbreviated codes bearing a relationship to the input keystrokes. (Tr. 64:58). Under the control of the IMP, the PC would only display entered data that was acceptable to the IMP program. (DX 191 at 3). Also, the tokenized program text apparently could be recorded on Datamaster cards. *See, e.g., id.* at 8-9.

The PC did not use a read-only memory, that is, a memory that only had a read, not write, function. (Tr. 60:18). Also, the PC did not have a program that could run out of read-only memory; each program altered itself during execution. (Tr. 64:21-24, 63).

Claim 1 of the '375 patent, which Datapoint contends is anticipated by the PC,[35] claims a source data entry terminal device that contains, *inter alia*, a microprocessor including a fixed-program read-only memory. A read-only memory is a memory that has only a read function and not a write capability. The PC lacked such a memory, and so the limitation on claim 1 of a microprocessor with a fixed-program read-only memory is not found in the PC. It is undisputed that a fixed program is defined as a program that neither alters itself during execution nor is alterable by the operator of the program. The PC programs altered themselves during execution. Thus for this reason also, the limitation of a microprocessor with a fixed-program read-only memory is not found in the PC. Accordingly, claim 1 is not anticipated by the PC.

---

[35] NTI does not agree that every application of the PC is prior art under 35 U.S.C. § 102. It agrees that the PC hardware and the radiation treatment application were described in printed publications more than one year before the '375 patent application, *see* NTI Resp. to Datapoint's Proposed Finding of Fact No. 121, but asserts that other applications were experimental. Given the court's conclusion as to anticipation, the court need not resolve this dispute.

Claim 40 of the '375 patent, a method claim, contains the limitation of dedicating the source data entry terminal device to a given operational configuration by incorporating a fixed program in a central processor. As explained above, the PC had no fixed program, so this limitation on claim 40 is not found in the PC. The PC, therefore, does not anticipate claim 40.

Claim 29 of the '375 patent claims a method of source data capture that includes the steps of generating coded signals representative of alphanumeric source data desired to be captured and recording the data on magnetic tape after the data has been visually displayed. The PC does not contain all the elements of claim 29. It is not altogether clear whether the term "magnetic tape" as used in claim 29 includes magnetic tape attached to cards as in the PC Datamaster cards. Nonetheless, the PC recorded processed data, not the alphanumeric data "desired to be captured" for which coded signals were generated.[36] Thus the "recording on tape" limitation in claim 29 is not found in the PC, and the PC does not anticipate claim 29.

-4-

Datapoint contends the HP 2116 computer anticipates claims 1, 29, and 40 of the '375 patent. NTI agrees that the HP 2116 was described in printed publications, was in public use, and was on sale more than one year prior to the filing date of the '375 patent.[37] *See* NTI Resp. Br. at 196. Thus the HP 2116 is prior art for anticipation purposes.

The HP 2116 was a small, general purpose computer designed and built by Hewlett-Packard. The HP 2116 used a non-volatile[38] core memory. (DX 55 at 2-3). The HP 2116 did not have a ROM memory, but it was planned that a ROM would be implemented to some degree in the HP 2116. (Tr. 40:154-55; 159). The core memory was used as a buffer for data entered into the HP 2116, including for data being displayed. (Tr. 40:159-60; 164-65). The memory also contained the HP 2116 program, which was typically loaded at the time of manufacture and dedicated a HP 2116[39] system to its particular hardware set-up and applications software. (Tr. 40:155-57). The HP 2116 program would contain software 'drivers' for the peripherals. (Tr. 40:153-54). There was expert testimony that little control logic was required in the peripherals and that most of the peripheral control logic was in the central processor of the HP 2116. (*Id.*; 41:136-37). The court was not directed to evidence that was to any degree more detailed concerning the control logic distribution. Interfacing between the computer and its peripherals was accomplished by means of dedicated data input and output buffers. (DX 55 at fig. 3-1; Tr. 40:152, 172-73; 41:140-42).

---

[36] The court notes that Datamaster cards were probably used to some extent for raw data entry. (*See* Tr. 49:108-09; DX 159). There is not clear and convincing evidence, however, concerning whether and how the PC was used to put that data on the cards. Accordingly, the court does not consider this evidence to be sufficient to show that the PC met the "recording on tape" limitation of claim 29.

[37] Except as otherwise noted, there is also no substantial dispute that the various peripherals and system configurations of the HP 2116 were described in printed publications and publicly available more than one year before June 13, 1969.

[38] The memory could retain its contents if the power was turned off.

The HP 2116 could be outfitted with various peripherals. One such peripheral was the teleprinter input/output. (DX 56). This contained a keyboard for inputting data and a printer for printing output from the computer. (*Id.*; Tr. 39:113). An interface card was required for interfacing the teleprinter and computer. The card contained logic and storage and converted the parallel data from the computer to serial data going to the teleprinter, and vice-versa. (DX 56 at 10-08140). A teleprinter-type device called a glass teletype that used a CRT for display was developed for the HP 2116 and was available in 1970. (Tr. 39:115; 40:15-51). The HP 2116 also had an optional reel-to-reel magnetic tape output.[40] (*See* DX 54 at 10-08131; Tr. 39:157-58).

---

[39] A "system" would be a HP 2116 computer along with various optional peripheral devices and applications software. (Tr. 40:155-57).

[40] A cassette tape recorder was used on the HP 2116, but such use was internal to Hewlett-Packard for experimental purposes. (Tr. 39:159-62; 40:164; 41:163-64). Such use is insufficient to put the cassette tape usage out to the public for prior art purposes. Some Hewlett-Packard employees left the company and formed Dicom to develop a cassette tape peripheral for the HP 2116. The Dicom device did not use standard audio cassettes, but rather used specialty digital cassettes. Also, the device used a conventional, but heavily modified, cassette recorder. The device was publicly introduced in the spring of 1969. (Tr. 39:162-64).

The HP 2116 was used in various systems. One such system was the 2018 data acquisition system. (DX 54). The 2018 had a teleprinter, analog data input peripherals, and optional magnetic tape and punched tape peripherals. The 2018 system was basically for logging and reduction of data from analog input devices, for example, thermocouples. The 2018 user would create FORTRAN programs for the 2018 to control data acquisition, conversion, logging, and reduction. Data would be read in, processed, and output in accordance with the FORTRAN program. In fact, data could be entered 'free-field," without regard to spacing and decimal points. The FORTRAN program apparently would supply the appropriate field parameters. The program could be entered through the teleprinter keyboard or punched tape reader. Data also could be entered via the keyboard.

Another system using the HP 2116 was a microwave network analyzer. (Tr. 39:133-35). This system used a programming language so that the user could write a program to accept data and parameters and to perform the required analysis. The program instructions were entered via the teleprinter keyboard.

Still another system using the HP 2116 was an employee timekeeping system. (Tr. 39:156-57). The system used optical mark card readers as input devices. (DX 57 at 10-08153 to -08154). The card readers were connected directly to the computer or were connected via telephone lines and a communications interface. (Tr. 39:119-20). These card readers read data that was entered on cards by marking boxes on the cards with pencil. The cards were laid out in a certain format for data entry. (DX 57 at 10-08153 to -08154). Apparently, information could also be input from a keyboard. *Id.* The data could then be processed or reduced, if called for by the user-programmed BASIC software, and transferred to an appropriate output device such as a printer. *Id.* At one of its facilities, Hewlett-Packard used a magnetic tape output and then transferred the tape to an IBM computer for processing. (Tr. 39:156-57). Hewlett-Packard also used an ordering system similar to the timekeeping system. (Tr. 39:157-58). Orders from around the world would be entered to a HP 2116 system via telephone lines. The orders would be collected on magnetic tape and then the tape would be transferred to an IBM computer for processing.

Claim 1 of the '375 patent is a device claim requiring a microprocessor including a fixed-program read-only memory with the read-only memory having a built-in program dedicating the terminal to a particular functional configuration. The HP 2116 did not have a read-only memory, but rather a non-volatile core memory. Furthermore, the evidence is not clear and convincing that the HP 2116 used a fixed program. It was not the normal practice at Hewlett-Packard to write programs that did not alter themselves during execution (Tr. 42:105) and the testimony presented by Datapoint is not clear and convincing that the HP 2116 had programs that did not alter themselves during execution. (*See* Tr. 40:154-55;[41] 41:138; 42:100,, 104-05).

There is also a lack of clear and convincing evidence that the HP 2116 program loaded in at the time of manufacture completely dedicated the terminal to a particular functional configuration. In light of the '375 patent claims and specification, the term "functional configuration" (as well as the similar term "operational configuration" of claim 40) means at least the peripheral configuration *(e.g.*, input, output, and recording devices) of the terminal. (*See* PX 1, col. 2, 1. 45-58; col. 8, 1. 24-51). In other words, the "built-in" "(or, in the case of claim 40, the "fixed") program provides control for a given combination of specific peripherals. It contains definitions of various keys and characters to be displayed. *Id.* col. 8, 1. 24-51. Those keys may be defined by the ROM so that through the execution of the ROM program the key will, for instance, initiate an action of a tape recorder, printer, or a communications link of some nature. The 2108, timekeeping, and other systems allowed the user to program the system for data acquisition and reduction. Apparently, such programming topics would include determining which and how many input channels to the computer should be read. (*See* DX 54 at 10-08128; DX 57 at 10-08151). Given that the language "dedicating the terminal to a particular functional configuration" means at least dedicating the hardware configuration of the terminal, the loaded-in program of the HP 2116 systems is not sufficient to meet the claim 1 limitation. The user apparently can program the system for at least some part of its hardware configuration, which the '375 patent does not allow. Thus each and every element of claim 1 of the '375 patent is not found in the HP 2116. The HP 2116, therefore, does not anticipate claim 1.

---

[41] This reference appears to say there were fixed programs. In light of all the evidence, however, it is not clear that there were fixed programs for the HP 2116.

Claim 40 of the '375 patent is a method claim requiring the dedication of the '375 terminal to a given operational configuration by incorporating a fixed program in the terminal's central processor. For the reasons stated above, there was not clear and convincing evidence that the HP 2116 contained this fixed program element of claim 40. Thus the HP 2116 does not anticipate claim 40.

Claim 29 of the '375 patent is a method claim containing multiple limitations including the steps of generating coded signals representative of alphanumeric source data desired to be captured, visually displaying the data by the use of the signals, using a buffer memory to temporarily store the data being displayed, and recording the data on magnetic tape after visual display.

The evidence presented by Datapoint is not clear and convincing that the HP 2116 systems contained these elements.[42] For instance, the HP 2116 systems, except perhaps for the employee timekeeping and ordering systems, would display data that had been processed or converted by the user-written data acquisition and reduction programs. Apparently, data (and signals) other than those generated by the input devices were used for display. Thus the second element of claim 29 is not met.

Also, as to the timekeeping and ordering systems, the evidence is not clear concerning the data display and recording sequence in these systems. Given that these HP 2116 systems were used at times to collect data from multiple inputs for transfer to an IBM computer, there is not clear evidence that any display does in fact occur. Thus there is not clear and convincing evidence that the last element of claim 29 is met by these HP 2116 systems.

Accordingly, Datapoint has not shown by clear and convincing evidence that all the elements of claim 29 of the '375 patent were contained in the various HP 2116 systems, and the HP 2116 systems do not anticipate claim 29 of the '375 patent.

---

[42] In the evidence presented, Datapoint did not take one HP 2116 system and identify the elements relevant to claim 29 that it thought were disclosed in the system. Rather, the evidence typically concerned the HP 2116 generally, with a particular HP 2116 system being invoked to read on an element when convenient, but without clear discussion concerning whether that particular system contained the other elements relevant to claim 29. (*See* Tr. 41:160-80).

-5-

Datapoint contends the Hewlett-Packard 9100A ("HP 9100A") anticipates claims 1, 29, and 40 of the '375 patent.[43]

The HP 9100A was a programmable, floating point calculator manufactured by Hewlett-Packard and is described in defendant's exhibit 72. The calculator was based on a machine invented by Osborne. (*Id.* at 13; Tr. 41:20-21). The HP 9100A had a keyboard with numeric keys, various function keys, and six alphabetic keys. (DX 70 at 5). The keys would generate code signals for the keys when depressed. *Id.* at 12. The machine had a CRT display that displayed 3 registers: the X register display being the display of numbers as they are entered from the keyboard; the Y register display being the display of an accumulator, that is, the results of arithmetic operations on the numbers in the X register and in the Y register; and the Z register display being the display of a temporary storage. *Id.* at 3. The function keys were dedicated to various arithmetic functions and were used to perform operations on numbers entered from the keyboard.

The HP 9100A could also be programmed. *Id.* at 7. It had a core memory for containing a program, including constants; the programs were basically sequences of keystrokes recorded in the core memory. *Id.* at 7-9. Programs could be entered by the operator when the HP 9100A was in the program mode. In this mode the program could be displayed after being entered using a STEP PRGM key. The display would show codes for the keys entered for a specific step. *Id.* at fig. 7. The program could be executed in a RUN mode. Programs could be recorded from the core memory onto magnetic cards inserted into the HP 9100A.[44] *Id.* at 7-9. These cards were wallet-sized, multiple-track cards containing the same oxide as that used on magnetic tape, and the cards were read or written to by the same type of magnetic head as magnetic tape. (*Id.* at 7-9, 12-13; Tr. 41:102).

---

[43] It is undisputed that the HP 9100A was described in printed publications, was in public use, and was on sale more than one year prior to the filing date of the '375 patent. Thus the HP 9100A is prior art for purposes of anticipation under 35 U.S.C. § 102(b).

[44] Of course, the programs could be read back from the cards into the HP 9100A's core memory.

Osborne used the calculator's programming capability to conduct a demonstration at trial showing that, with some effort, data entered via keystrokes could be displayed, recorded on a card, and read back from the card to the HP 9100 display.[45] (Tr. 54:182-94).

The alphabetic keys on the HP 9100A were typically used to identify certain registers in the machine. Certain of the letters represented by the keys could be entered and displayed one at a time in the program mode as part of program steps. (Tr. 72:95-96). The letters could not be displayed other than in this program mode.

The HP 9100A was controlled via logic devices. Apparently, the logic for the calculator, keyboard, display, and magnetic card reader were centrally located. (DX 70 at 10-12; Tr. 41:87-92). The HP 9100A had two types of memory: the read-write core memory already mentioned for holding user data and user programs (DX 70 at 10) and a read-only memory. There was a program read-only memory that contained subroutines for implementing the various key functions. The device also contained stored constants, character encoders, and CRT modulating patterns. *Id.* at 10, 12. There was also a control ROM that coordinated between the program ROM, the core memory, and the logic gates. *Id.* at 10.

Claim 1 of the '375 patent is an apparatus claim containing numerous elements. The HP 9100A does not contain the first element of claim 1: "a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof." The claims and specification of the '375 patent make clear that a keyboard for producing alphanumeric data as used in claim 1 means a keyboard that can produce, *inter alia*, all of the alphabetic characters. (*See* PX 1 at col. 3, l. 23-29, col. 4, l. 46 to col. 5, l. 3, col. 9, l. 49-53). The HP 9100A can only produce a few alphabetic characters; thus the HP 9100A does not contain this element of claim 1.

---

[45] Osborne used an HP 9100B for the demonstration. It is undisputed that the HP 9100B is essentially the same as the HP 9100A except for differences unimportant to the court's analysis.

The HP 9100A does disclose the second element of claim 1; it has, in its X register display on the CRT, an optical display means for visual data read-out. The HP 9100A also has a means for coupling entered data to a data recorder or reproducer means. This is reflected by the fact that data entered into the machine can be processed through the machine and recorded on magnetic cards.

The remaining elements of claim 1 require the data entry terminal to have a programmed microprocessor interfaced to the keyboard, display, and means for coupling entered data to the data recorder/reproducer. The microprocessor is to have a fixed-program read-only memory and a central logic unit embodying substantially all the control logic for the keyboard and data display. Also, the ROM is to have a built-in program dedicating the terminal to a functional configuration and establishing an instruction set that time shares the control logic unit with the keyboard and display "to control the same in conformance with such functional configuration." There is not clear and convincing evidence that these elements of claim 1 are contained in the HP 9100A.

It is clear from the specification and file history of the '375 patent that the "programmed microprocessor" in claim 1 consists of various latches and registers, a logic unit (made up of logic devices), and a memory that includes ROM with a program in the ROM being executed via the logic unit to control the operation of the terminal including certain functions of terminal peripherals. (PX 1 at col. 2, 1. 21-23; col. 4, 1. 1-6, 20-24; col. 7, 1. 51-57; col. 8, 1. 24-51; col. 9, 1. 54-58; col. 12, 1. 12-15; PX 2 at 51-52, 60).[46] The HP 9100A does contain a ROM, other memory, and logic devices, so initially it may appear to have a microprocessor (in terms of the '375 patent). Arthur Larky ("Larky"), plaintiff's principal expert, testified, however, that the HP 9100A did not have a programmed microprocessor (Tr. 72:96). The court agrees. Evidence does exist that the HP 9100A ROM contains subroutine programs defining the calculator's keys and that a logic unit exists for controlling the HP 9100A including the peripherals. There is not clear and convincing evidence, however, that a program contained in ROM is executed by the logic unit to control the peripherals.[47] (*See* DX 70 at 10-12; Tr. 41:87-95; *see also* 41:29-33).

---

[46] *See also supra* at § II(E) (4) where "functional configuration" is defined to include at least control of terminal peripherals.

Furthermore, the testimony concerning the control of the peripherals in the HP 9100A was that the device "serviced ... at separate times input data, serviced the cathode ray tube and shared its capabilities among many tasks," (Tr. 41:95) as claim 1 of the '375 patent requires.[48] Clear and convincing evidence does not exist, however, that this timesharing was established by means of a program built into the ROM. (Tr. 41:92-95). For these reasons, clear and convincing evidence does not exist that the HP 9100A contained the last three elements of claim 1 of the '375 patent. Thus the HP 9100A does not contain each and every element of claim 1 of the '375 patent and does not anticipate claim 1.

Claim 40 claims a method of implementing a source data terminal device, with the method consisting of several steps including the step of dedicating the terminal to a given operational configuration by incorporating a fixed program in the device's central processor. As the court holds *supra* at § II(E)(4), the term "operational configuration," like "functional configuration," includes at least the configuration of the peripherals of the device. Also, it is clear from the patent that the "fixed program" of claim 40 means essentially the same as the "fixed program" of claim 1, that is, a program in memory executed by a logic unit to control the device, with the program neither altering itself during execution nor being alterable by the operator.

Based on these definitions and the court's findings and conclusions concerning the existence of a microprocessor and other related elements of claim 1, the HP 9100A does not dedicate itself to a given operational configuration by incorporating a fixed program in a central processor. Therefore, each and every element of claim 40 is not contained in the HP 9100A, and the HP 9100A does not anticipate claim 40.

---

[47] The court is aware of and has considered that the HP 9100A program ROM contains "character encoders" and "CRT modulating patterns," (DX 70 at 12), apparently like the '375 terminal (see PX 1 at col. 10, l. 12-16) and that in the HP 9100A ROM there is control ROM coordinating the operation of the program ROM and the core memory (DX 70 at 10). This evidence, without more, does not make the existence of a programmed microprocessor in the HP 9100A clear and convincing. (*See, e.g.*, PX 1 at col 8, l. 24-51).

[48] Claim 1 requires that at least the data entry and display means be controlled by timesharing.

Claim 29 of the '375 patent is a method claim having the limitation that data must be recorded on magnetic tape after the data has been visually displayed. The HP 9100A does not contain this element of claim 29 because the HP 9100A records on magnetic cards, not magnetic tape. The HP 9100A materials only refer to the cards as "magnetic cards." (*See* DX 70 at 8-9, 12-13). No evidence exists that the cards contained a strip of magnetic tape. There was evidence that the cards utilized the same oxide and read-write heads as magnetic tape, but that does not make a wallet-sized "card" a "tape."[49] Thus the HP 9100A does not contain each and every element of claim 29 of the '375 patent and does not anticipate claim 29.

-6-

Datapoint contends that claim 24 and its dependencies are anticipated by U.S. Patent No. 3,401,396 (Wolf/Marino '396), filed May 10, 1965, and No. 3,575,556 (Wolf/Marino '556), filed November 13, 1967. (DXS 421, 422).

Claim 24 sets out a method of source data capture made up of the following elements: generating coded signals representative of data to be captured; and recording such generated signals upon magnetic tape, which is enclosed within cassette tape cartridges of the basic type used for audio recording.

Wolf/Marino '396 and '554 both disclose, *inter alia*, a method of data capture wherein data is entered via a keyboard with the keyboard generating signals corresponding to the entered data. The signals go directly to a recording head that enters the signals upon magnetic tape contained within a cartridge. The data signals are neither stored nor displayed, but rather are entered directly onto the magnetic tape.[50]

---

[49] In light of all the evidence concerning the magnetic cards, the court does not find convincing the testimony (Tr. 41:100-01) that the magnetic card reader was a tape recorder.

[50] Each keying of data generates a data signal to be recorded and also causes the generation of stepping pulses that cause the tape transport to advance the tape an appropriate increment in preparation for the recording of the next-entered data signal.

The magnetic tape cartridge disclosed in the Wolf/Marino patents is a cartridge that was commercially available in the 1960's and was used for audio recording systems, a RCA Snap-Load Cartridge, type 10M-5.6C. The tape used in the cartridge, however, was digital, not audio, tape. (Tr. 56:141).

The first element of claim 24 is disclosed in the Wolf/Marino patents. As to the second element, NTI argues that the term "cassette" refers exclusively to the Philips cassette cartridge and that the Wolf/Marino patents do not disclose the use of such a cassette. Other claims, *e.g.*, claims 6 and 36, impose Philips-type configuration limitations on the '375 patent cassette. These limitations cannot be imposed on the broader claim 24. *See D.M.I.*, 755 F.2d at 1574; *Inpro*, 657 F.Supp. at 943. There was testimony, however, that the term "cassette' was "tied" to Philips-type cassettes around 1970, (Tr. 56:210), and the '375 patent; including the claims and specification, clearly contemplates a Philips cassette. Furthermore, the term "cassette" is used in the claims to describe a tape cartridge or magazine; the term is not merely interchanged with "cartridge" or "magazine." So the term "cassette" does have a limiting meaning in claim 24. Thus there is not clear and convincing evidence demonstrating that this element of claim 24 is disclosed in the Wolf/Marino patents and the Wolf/Marino patents do not anticipate claim 24 of the '375 patent.[51]

-7-

Datapoint asserts that claim 24 and the its dependencies are anticipated by U.S. Patents Nos. 3,552,671; 3,582,743; 3,587,997; and 3,619,625 ("Wood & Diaz patents").

The Wood & Diaz patents disclose a tape recording apparatus and certain component parts of a tape recording apparatus. The earliest of these patents was filed January 21, 1969. Because these patents were filed within six months of the '375 patent, they do not constitute prior art for purposes of anticipation under 35 U.S.C. § 102(b). Datapoint does not show why these patented inventions otherwise constitute prior art. The inventions do not anticipate claim 24. Even if the Wood & Diaz patents were considered as prior art, they do not anticipate '375 claim 24 for they fail to disclose a method of data capture comprising each and every element of the claim; that is, they do not disclose the generation of coded data signals or the recording of those signals.

---

[51] Because claim 24 is not anticipated by Wolf/Marino '396 and '554, dependent claims 25-28 need not be addressed. It is clear, however, that because the Wolf/Marino patents do not disclose a data display or storage, claims 25-28 are not anticipated.

-8-

Datapoint contends the PDP-1 small, general purpose computer anticipates claims 1 and 40 of the '375 patent.[52]

The PDP-1 utilized a read-write magnetic-core memory. (Tr. 35:71, 74). The PDP-1 retained a program in memory even when the power to the computer was off. (Tr. 50:61). The PDP-1, however, did not use a read-only memory. (Tr. 35:87, 50:61). Furthermore, Datapoint's own witness testified that there was not a fixed program in the PDP-l.[53] (Tr. 35:87). The testimony of defendant's witness does not demonstrate that either the keyboard or display of the PDP-1 was connected to a buffer memory. (Tr. 35:89, 93). A buffer appears to have existed, however, between the computer's memory and its processing unit. (Tr. 35:89).

Claim 1 of the '375 patent claims a source data entry terminal device comprising, *inter alia*, a microprocessor, including a fixed-program read-only memory. The direct testimony of Datapoint's own witnesses indicates that this element of '375 claim 1 is not disclosed by the PDP-l; the DP-1 had neither a read-only memory nor a fixed program.

Claim 40 claims a method of implementing a source data entry terminal device including the steps of (1) connecting "at least a keyboard data entry means and a visual data display means to a buffer memory," and (2) "dedicating the terminal to a given operational configuration by incorporating a fixed program" in the terminal's processor. The former of these steps was not disclosed in the PDP-1. Further, the PDP-1 lacked a fixed program; therefore, the step of dedicating the terminal's configuration by the use of a fixed program was not disclosed in the PDP-1.

---

[52] It is undisputed that the PDP-1 was described in printed publications, in public use, and on sale more than one year prior to the patent application date. Thus the PDP-1 may be considered as prior art for anticipation purposes under 35 U.S.C. § 102(b).

[53] To the extent the testimony of another of defendant's witnesses could be construed to be contrary (see Tr. 50:61), the court finds the testimony to be conclusory and, when considered with the testimony of John Koudela ("Koudela") (Tr. 35:87), is insufficient to demonstrate that the PDP-1 had a fixed program.

Thus the PDP-1 did not disclose each and every element of claims 1 and 40 of the '375 patent, and claims 1 and 40 are not anticipated by the PDP-1 prior art reference.

-9-

Datapoint posits that the PDP-8 minicomputer anticipates claims 1 and 40 of the '375 patent.[54]

The PDP-8 minicomputer utilized a random access magnetic- core memory. (DX 372 at 83-84). The PDP-8's memory was not read-only memory, but rather was read-write memory as in the PDP-1. (Tr. 50:62). The PDP-8 used a teletype peripheral that provided keyboard or punched paper tape input to the machine and typed copy or punched paper tape output from the machine. (DX 372 at 83-84). PDP-8 options included a CRT display and magnetic tape data storage system. *Id.* at 140, 159-60. The PDP-8 system could utilize various types of programs, see id. at 365-87; Datapoint did not, however, present specific testimony as to these programs, their use, and their characteristics. The exhibits presented by Datapoint (DXS 244, 372) provide little detail on the programs and do not address whether the programs operate as fixed programs. Datapoint presented testimony in connection with the PDP-5, a predecessor of the PDP-8, that programs, presumably such as these PDP-8 programs, may or may not have been loaded into the PDP-5 at the time of its manufacture. (Tr. 42:138).[55]

---

[54] It is undisputed that the PDP-8 was described in printed publications, in public use, and on sale more than one year prior to the filing date of the patent application. Thus the PDP-8 may be considered as prior art for anticipation purposes under 35 U.S.C. § 102(b).

[55] NTI objected to evidence concerning the PDP-5 on grounds that it did not receive notice that the PDP-5 was to be referenced as prior art. The court need not decide whether to exclude the PDP-5 evidence in light of the court's conclusion that the PDP-8 does not anticipate the '375 patent.

Claim 1 of the '375 patent contains several limitations, including that the claimed source data entry terminal device have a microprocessor that includes a fixed-program read-only memory with the read-only memory having a built-in program dedicating the terminal to a particular functional configuration. It is clear that the PDP-8 did not disclose a read-only memory that had a built-in program. Thus these elements of claim 1 were not disclosed in the PDP-8. Likewise, Datapoint did not prove by clear and convincing evidence that the PDP-8 disclosed every element of claim 40. Testimony presented by Datapoint on claim 40 was for the most part merely conclusory. (*See* Tr. 42:144 (PDP-5 Evidence); 50:62-63).

Thus the PDP-8 does not anticipate claims 1 and 40 of the'375 patent.

-10-

Datapoint contends the Dynamic Experimental Processor, DX-1, anticipates claims 1 and 40 of the '375 patent.[56] The DX-1 was a system developed for the Air Force. (*See* Tr. 57:75-80). It had capabilities that included the display of graphic and alphanumeric data. (*See* Tr. 57:57-58; 58:15). The PDP-1 computer was used in the system. (Tr. 57:77, 79).

The record references cited by Datapoint are inconclusive to demonstrate whether many or all of the elements of '375 claims 1 and 40 are disclosed by the DX-1. For example, the testimony of Datapoint's witness, Pughe, is inexact as to whether he ever testified as to any one version of the DX-1 or whether he was testifying as to an evolving family of machines. Furthermore, the PDP-1 computer, used by the DX-1, has already been rejected by the court for purposes of anticipation, *see supra* at § II(E)(8), and the court has not been directed to any evidence that would warrant a different finding with respect to the DX-1. Accordingly, the DX 1 does not contain the elements of, and thus does not anticipate, claims 1 and 40 of the '375 patent.

---

[56] NTI disputes that the DX-1 is prior art under 35 U.S.C. § 102(b). The court need not resolve this issue for purposes of anticipation because, even if the DX-1 is considered prior art, Datapoint has failed to prove anticipation.

Datapoint contends the TC-500 accounting computer anticipates independent claims 1 and 40 and their dependencies. NTI disputes that the TC-500 meets the requirements for being prior art for purposes of anticipation under 35 U.S.C. § 102(b). The court concludes that Datapoint has not proven that the TC-500 is prior art under 35 U.S.C. § 102(b) and that even if the TC-500 were considered as prior art, Datapoint has failed to show by clear and convincing evidence that the TC-500 anticipates the claims of the '375 patent.

Datapoint did not offer evidence that the TC-500 was publicly known or used or on sale in this country, or patented or described in a printed publication in this or another country, more than one year prior to the date of the '375 patent application. The evidence suggests that the TC-500 may have been produced in England in the summer of 1967, but was not sold in this country until some time in 1969. (Tr. 62:373-76). Even this evidence does not appear to be unquestionable, first-hand knowledge. *Id.* Datapoint's evidence regarding the TC-500 does not relate principally to the TC-500, but to predecessors and sister-machines of the TC-500, namely the Q-machines[57] and the L-2000. Datapoint's witness, David Rasche, testified that there were private showings of the Q-machines in the U.S., although it is not clear that a completely operating Q-machine was demonstrated. (Tr. 62:366-69, 378). Rasche further testified that there were not major differences in the Q-machines and the TC-500, although he did not know the actual extent of the differences. *Id.* at 371-77. Rasche had left the company that produced the Q-machines and TC-500 long before the TC-500 was made. (Tr. 62:364-65, 369-70, 381). Thus Datapoint has failed to show that the TC-500 itself is prior art under 35 U.S.C. § 102(b).

It is undisputed, however, that an invention upon which the Q-machines were based was patented upon an application filed November 2, 1967, more than one year prior to the '375 patent application date. (DX 267). U.S. Patent No. 3,579,192 (the '192 patent), the basis for the Q-machines, discloses a digital computer that manipulates data under the control of microinstructions, with each microinstruction being executed through a series of microinstructions. (DX 267). Each microinstruction corresponds to and executes a control signal for actuating a hardware element in the computer. The computer disclosed in the '192 patent includes a keyboard input, a printer for output, and certain input/output buffers. The memory of the computer consists of a multi-track magnetic disk. (DX 267 at col. 4, 1. 28-42). This disk was used for storage of microinstructions, microinstructions, and data. *Id.* The '192 patent does not disclose that the computer contained a read-only memory,[58] but the computer used only magnetic read heads on the memory where microinstructions are stored and used magnetic read-write heads on the data-microinstruction memory. (DX 267 at col. 13, 1. 51-66; col. 14, 1. 23-29). The microinstructions could be altered by the operator through the keyboard. *Id.* at col. 4, 1. 52-55; col. 8, 1. 32-35; col. 12, 1. 22-53.[59] Microinstructions, however, were previously recorded and were not themselves changed by the keyboard. See *id.* at col. 13, 1. 51-66; col. 14, 1. 23-29. The changeable microinstructions controlled the microinstruction execution (*i.e.*, the microinstructions were made up of sets of microinstructions); the microinstruction set thus gave the computer its data manipulative operational configuration. Datapoint failed to show by clear and convincing evidence, and the '192 patent did not disclose, that the microinstruction set could not be altered by the operator while the microinstruction set was running, and that the microinstruction set did not alter itself during execution. The '192 patent failed to disclose a device that used a microprocessor that included a fixed-program read-only memory and also failed to disclose a method of implementing a device by dedicating the device to an operational configuration through the use of a fixed program in a central processor. The '192 patent thereby failed to disclose elements of claims 1 and 40 of the '375 patent. The '192 patent does not anticipate claims 1 and 40 of the '375 patent. There is no other evidence to alter this conclusion with respect to the TC-

---

[57] The plural form is used since there were several prototype versions of the Q-machine. (Tr. 62:354-55).

---

[58] *I.e.*, as defined for the '375 patent, supra at § IV(C) (1).

[59] There was evidence extrinsic to the patent that a Q-machine's macroinstructions also could be changed via a tape reader. (Tr. 62:362).

500, which was based on the '192 patent. (Tr. 62:379-81).

-12-

Datapoint asserts that the electronic calculator disclosed in U.S. Patent No. 3,487,369, issued to Claude F. King and others (DX 442) (the "King patent"), anticipates claims 1 of 40 of the '375 patent. The King patent was issued on December 30, 1969 upon an application filed August 12, 1966. The 1966 date is the operative date of disclosure of the patented invention, which is more than one year prior to the filing date of the '375 patent.

The King patent discloses an electronic calculator consisting of a keyboard having multiple sets of keys, a magnetic core memory with registers, registers external to the memory, various control and logic circuits, and a CRT display. (DX 442, col. 1-2).[60] The calculator operates generally by a user's transferring data, via the keyboard, into certain data registers. The operator then can cause the calculator to perform arithmetic operations on the contents of these registers in response to actuations of the keyboard or to the recall by the calculator of stored keystrokes. In essence, the device is a programmable calculator in which operations on data can be performed by manual actuation of keys (the calculator thus being in a "manual' mode) or by the running (in "run" mode) of a stored set of keyboard actuations.

Each keyboard actuation, or user level operation, (*e.g.*, pressing the "add" key) works by the actuation causing a set of microcodes to be read into the memory of the device. This set of microcodes causes the operation called for by the key to be carried out in the calculator, each microcode in effect being a subpart of the user level operation. These sets of microcodes, a set for each user level operation, are hard-wired into the core memory. Each time a user level operation is called for, the set of microcodes for that operation is accessed from the core memory and then used in the memory and registers and in conjunction with the control and logic circuits of the calculator to cause the operation to be executed.

Furthermore, the device also has the capability to store in its memory a user program, that is, a sequence of user level operations (key actuations) that the calculator can respond to automatically when it is operated in a "run" mode. (DX 442, col. 4, 1. 45). The user program can be entered into memory by the user (*i.e.*, by entering keystrokes to be stored); the program could be hard-wired into the calculator so that pressing a certain key identifying the program would oad it into memory; or, the program could be loaded into memory from a peripheral. Id. at col. 28, 1. 58-70.

---

[60] Datapoint offered no expert testimony to enlighten the court's understanding of the King device.

The calculator disclosed in the King patent does not capture data for future processing external to the calculator itself, as does the '375 source data entry terminal. It is therefore understandable that the King calculator does not disclose a means for data recordation or reproduction or a means for coupling data entered into the calculator to a data recorder or reproducer means.

Claim 1 of the '375 patent claims a data entry terminal comprising several elements, including a means for coupling data entered into the terminal to a data recorder or reproducer means. It is clear from the claims and specification of the '375 patent that "data recorder or reproducer" means at least a device for storage of data to be processed in the future separate from the short-term memory and registers of the '375 terminal. (*See* PX1 at cols. 1, 3, 13-16). The King patent calculator lacks such a device and the means for coupling data to it. First, the King calculator uses its core memory and registers for all storage of whatever may be entered into the calculator, data to be processed or instructions for processing. Second, registers in the calculator are used for temporarily holding data while it is being "processed," that is, while arithmetic operations are performed on it. They do not record data to be processed in the future. Even if the core memory could be construed as a recorder means, given its ability to retain its contents,[61] the core memory records operations to be done on data; it is not for recording data entered into the King patent calculator. Thus this calculator lacks the data recorder element of claim 1 of the '375 patent.

Claim 40 of the '375 patent claims a method of implementing a source data entry terminal comprising multiple steps, including dedicating the terminal to a given operational configuration by incorporating a fixed program in the terminal's central processor. It is not disputed that "fixed program" means that the program does not alter itself during execution and cannot be altered by the operator of the program. Also, the term "operational configuration" (as well as the similar term "functional configuration" of claim 1) means at least the peripheral configuration (*e.g.*, input, output, and recording devices) of the terminal. *See supra* at § 11(E)(4). There is not clear and convincing evidence that the King patent calculator discloses this element of the '375 patent claim 40.[62] The microcodes of the calculator are the only instructions that could be construed in any way to be "fixed." Even such a construction is questionable, however, since the user level programs are alterable by the operator, and the microcodes are but subparts of these user level programs.

---

[61] There was some expert testimony that a core memory, in another context, was an alternative to a data recorder such as magnetic tape. (Tr. 46:161-64 (testimony regarding BR-90)). But even this testimony was not that the core memory was equivalent to a data recorder.

Further, the court, unaided by expert testimony on the King device, cannot tell to what extent microcodes actually define the peripheral set-up of the calculator. Actuation of keys on the calculator, for instance, causes the calculator to "access' a set of microcodes corresponding to that key function. (DX 442, col. 3, l. 60-71). Thus it appears that the fixed microcodes as a program do not define the keyboard peripheral as much as the wiring of the keyboard brings to the memory a set of instructions to be executed. Also it is not clear from the King patent that the microcodes would be used in having a peripheral configuration other than the keyboard-CRT display set-up disclosed in the patent.

The King calculator thus fails to disclose elements of both claims 1 and 40 of the '375 patent and fails to anticipate those claims.

-13-

Datapoint contends the BR-90 stored program display console anticipates claims 1, 29, and 40 of the '375 patent.[63]

---

[62] Likewise, it fails to disclose the comparable "functional configuration" element of claim 1 of the '375 patent.

[63] It is undisputed that an invention used in the BR-90 was patented in U.S. Patent 3,389 404 (Koster '404) on an application filed September 20, 1965. It is also undisputed that the BR-90 was described in printed publications more than one year prior to June 13, 1969. Thus the BR-90 may be considered as prior art for purposes of anticipation under 35 U.S.C. § 102(b).

The BR-90 is a display console, typically used for alphanumeric data and graphics display, that facilitates communication between an operator and a digital data processing computer. (DX 447, col. 1, 1. 11-15; Tr. 73:4). The BR-90 consists of a display processor, a CRT display system, a film projector for enhancement of the display, and certain other peripherals such as keyboards, a light gun cursor control, and a computer interface module. (DX 21 at 202902). Blocks of data could be transferred from a data processing computer into the memory of the BR-90 processor. The data then could be displayed, and operations (*e.g.*, copy/delete functions) could be performed on the data by the operator via the keyboards and light guns. The evidence does not show that the keyboards were used for data entry as such, but rather were used for data editing functions. Data could also be transferred from the BR-90 to the system computer. (DX 447, col. 1, 1. 66-col. 2, 1. 19; col. 4, 1. 3-31). Apparently this transfer of data between the BR-90 and computer took place through the computer interface module.

The BR-90's memory was a non-volatile magnetic core memory; part of the memory was for data to be displayed, and part was for holding the programs that ran the BR-90. (DX 21 at 202902). The BR-90 did not utilize read-only memory. (Tr. 46:160). Neither did it use a magnetic tape data storage device. (Tr. 46:161-64).

Claim 1 of the '375 patent includes at least one element that is not disclosed by the BR-90: a read-only memory that has a program dedicating the machine to a particular configuration. This is so because the BR-90 does not have a fixed program memory. This is explained in certain of the following paragraphs.

The BR-90 also fails to disclose each and every element of claim 29 of the '375 patent. Claim 29 claims a method of source data capture comprising multiple steps including the recording of data on magnetic tape after it has been visually displayed. The BR-90 lacks a magnetic tape recording device altogether.

Datapoint has also failed to show by clear and convincing evidence that the BR-90 discloses each and every element of claim 40 of the '375 patent. The evidence does not clearly show that the BR-90 utilized a fixed program in its processor to dedicate the machine to a given operational configuration. Magleby testified that if "fixed program" means a program loaded at the time of manufacture, then the BR-90 had such a program. (*See* Tr. 46:166; 41:138-39). There is no evidence, however, that the BR90 program complied with one facet of the undisputed meaning of fixed program: that the program not alter itself during execution (whether it was loaded at the factory or not). Furthermore, the Koster '404 patent teaches that the memory of the BR-90 "will be assumed ... [to be] of the destructive readout type and therefore requires that a write operation follow each read operation.' (DX 447, col. 5, 1. 15-18). There was no testimony adduced concerning such mandatory write-after-read operations.

Accordingly, Datapoint has not proven by clear and convincing evidence standard that a fixed program was disclosed in the BR 90. The BR-90 thus fails to disclose each and every element of claim 40 of the '375 patent.

The BR-90 has not been shown to anticipate claims 1, 29, or 40 of the '375 patent.

-14-

Datapoint argues that both the FLIDEN and the invention described in U.S. Patent 3,241,120 (Amdahl '120) (DX 448) anticipate independent claim 29 of the '375 patent. The FLIDEN was a specific application and embodiment of the message display and transmission equipment described in the Amdahl '120 patent; therefore, the two devices are being considered at once. (*See* DX 51 at 10-05368 to -05369; DX 448 at col. 5, 1. 52-74).[64]

The FLIDEN embodiment of the Amdahl '120 invention was for use in an air traffic control system. (DX 51 at 10-05369). The FLIDEN/Amdahl system involved the arrangement of multiple components in a large console. The console housed a keyboard for alphanumeric data entry, a CRT display, and a storage and control unit. *Id.* at 10-5368 to -5369. The storage and control unit contained the electronics for controlling the system, including a magnetic drum memory that contained read-only and read-write areas on it. (*Id.* at

---

[64] It is undisputed that the FLIDEN was described in printed publications, in public use, and on sale more than one year prior to June 13, 1969, the filing date of the '375 patent. The Amdahl '120 patent application was filed July 25, 1960, and the patent issued on March 15, 1966. (DX 448). Both the FLIDEN and Amdahl '120 invention, therefore, may be prior art references for purposes of anticipation under 35 U.S.C. § 102(b).

10-5369; Tr. 42:22-23). The electronics of the FLIDEN/Amdahl equipment were dedicated by hardware to the message display and transmission function. The device did not have a software program as such. (Tr. 42:24).

The equipment functioned essentially to enter data to a data processing system or other computer. (DX 51 at 10-5368; DX 448 col. 1-2). A set of data, or "message," desired to be sent to the data processing system could be entered into the FLIDEN/Amdahl equipment via its keyboard. (DX 51 at 10-5369; DX 448, col. 1-2). The equipment stored the message, and when it was complete, the operator could cause the FLIDEN/Amdahl to transmit the message over an output line to the data processing system. (*Id.*; DX 448, col. 1-2). FLIDEN was used for transmitting flight plan information to a flight plan processing computer. (DX 51 at 10-05369).

Data entered into the FLIDEN/Amdahl equipment via the keyboard would be recorded on the magnetic drum as the data was entered. (DX 51-10-5369; DX 448, col. 1-2). The keys generated data signals, and those signals were converted to binary and recorded on the drum memory. (DX 448 at col. 2:59-3:16). The drum memory was not volatile. (Tr. 42:22-23). The drum stored the entered data temporarily, and it also was used in displaying the data on the CRT. Id. The drum was used to store only one message at a time, and the message would be transmitted before another message was entered. (Tr. 42:34, 35; DX 51 at 10-05371; DX 448 at col. 2). As data was entered via the keyboard, it was displayed on the CRT. (DX 51 at 10-05369). Errors could be corrected or the entered data edited readily via the keyboard. (*Id.*; DX 448 at col. 1-2). The equipment had forward, backspace, and erase key functions, as well as a display cursor to facilitate editing. (DX 51 at 10-5371; DX 448 at col. 5). The FLIDEN/Amdahl equipment also had alphabetic and numeric error checking capabilities for data fields. (DX 51 at 10-5370 to 5371; DX 448 at col. 2). Once an operator entered a message and verified its correctness, he could cause the message to be transmitted over an output line to the data processing system. (DX 51 at 10-5371; DX 448 at col. 2).

Claim 29 of the '375 patent describes a method of source data capture made up of multiple elements. Although it appears that the FLIDEN/Amdahl equipment meets the first three elements of claim

29, its equipment does not disclose the recording of data on magnetic tape after it has been displayed. It discloses only the transmission of data over an output line after the data is displayed. The magnetic drum memory does not serve the function of magnetic tape in claim 29. If anything, the drum serves as a buffer memory for temporarily storing data being displayed. Thus the FLIDEN/Amdahl equipment does not anticipate claim 29 of the '375 patent.

-15-

Datapoint contends claim 29 of the '375 patent is anticipated by the autofluoroscope described in the Spergal patent. *See supra* § II(A)(11). The invention is, of course, prior art, for purposes of anticipation given the filing and issuance dates of the patent. *See* 35 U.S.C. § 102(b).

Datapoint offered neither testimony nor briefing on the Spergal invention with respect to anticipation. The invention is a system for detecting and displaying the distribution of diagnostic radioactive materials inside a medical patient's body. (DX 428 at col. 1, 1. 8-18). The system has an array of detectors positioned in proper relation to a table on which the subject patient reclines. *Id.* at col. 2, 1. 18-22. Detection of a radioactive disintegration by a detector causes the generation by the detector array of a signal representative of the X-Y coordinates of the detector and, thus, of the location of the disintegration. *Id.* at col. 3, 4. This signal causes the system to access a memory location corresponding to the X-Y position; the contents of the memory location are incremented to show that one detected event occurred. *Id.* at col. 4:17-30. The memory is a coincident core memory. *Id.* at col. 6, 1. 44-46. When the system is in the "count" mode, each time an event occurs the X position, Y position, and memory count are converted to analog voltage signals to display a spot on the display at the appropriate X-Y position. *Id.* at col. 4:36-51. The intensity of the displayed spot is proportionate to the memory count; the higher the count, the greater the intensity. *Id.*

The system may also be operated in a "display" mode in which counting is stopped. *Id.* at col. 4, 1. 52-53. Also, the display signal may be enhanced by an averaging technique. This is referred to as cross-correlation. *Id.* at col. 4, 1. 60-63. Photographs of the display can serve as a permanent record of the display. *Id.* at col. 2, 1. 46-57.

The patent also discloses a paper tape punch for storing the contents of the system memory (i.e., counts at each X-Y location). *Id.* at col. 5, l. 25-42.[65] The paper tape punch could also have a manual data input means.

The Spergal invention does not disclose each and every element of claim 29 of the '375 patent. Claim 29 requires recording of data on magnetic tape after it has been displayed. The Spergal patent does not disclose recording on magnetic tape. Claim 29 also requires as two of its elements the generation of coded signals representative of alphanumeric source data and the display of the data by use of such signals. The Spergal patent does not generate signals representative of alphanumeric source data, rather it generates signals representative of a certain position on the detector array and on the display. Even if the Cartesian coordinates could be considered alphanumeric data, however, that data is not displayed. Rather, a spot is displayed, with the coordinates being used to position the spot. Furthermore, the Spergal system does not generate signals representative of the memory count; the memory count is not source data. Also, the memory count, if considered as data, is not displayed, but rather is used to control the intensity of the spot on the display.

For these reasons the Spergal patent does not disclose each and every element of claim 29 of the '375 patent, and the Spergal invention does not anticipate claim 29 of the '375 patent.

-16-

Datapoint contends the invention described in U.S. Patent 3,242,470 anticipates claim 29 of the '375 patent. The patent deals with an apparatus for automation of a telephone directory information service. (DX 398). The patent was issued to David W. Hagelbarger and others on March 22, 1966 on an application filed August 21, 1962. The Hagelbarger apparatus is, of course, prior art for purposes of anticipation given the date of issuance of the Hagelbarger patent.

Datapoint did not offer testimony or briefing on the Hagelbarger invention concerning anticipation. The Hagelbarger patent discloses an apparatus for automation of a telephone directory information service. The apparatus allows an operator to retrieve for display telephone directory entries from a database of a master telephone directory. (DX 398 at col. 1, l. 11-64). The database is contained on a set of large magnetic storage discs, and is called the "main file." [66] *Id.* at col. 1, l. 57-64; *id.* at col. 7:29-37. Also on discs in the system are indices to the main file. *Id.* at col. 1, l. 64 to col. 2, l. 10. Accessing these indices and the main file are multiple operator-stations, which each consist of an operator entry device and a display such as a CRT. *Id.* at fig. 1; *id.* at col. 2, l. 35-48.

---

[65] In the Spergal patent claims, reference is made to a tape recording and tape reading means. (DX 428 at col. 7, l. 25 - col. 8, l. 5). It is clear from the specification and claims of the Spergal patent that "tape" means paper tape. *See id.*; *id.* at col. 5, l. 25-42; *id.* at col. 2, l. 66-71.

The system accepts from an operator an inquiry to locate a name (and its corresponding telephone number); the system then uses the indices to locate a block of entries in the main file containing the requested entry. *Id.* at col. 2, l. 11-35; id. at col. 3, l. 68 to col. 4, l. 16. The block is placed in a buffer for access by the operator and display on the operator's CRT.[67] *Id.* at col. 2, l. 31-56. Only a portion of the retrieved block may be displayed at a time, but the apparatus has the capacity for the operator to access and have displayed all portions of the block, *i.e.*, the viewing "window" may be changed. *Id.* at col. 2, l. 49 to col. 3, l. 26.

The Hagelbarger patent discloses two different devices for use by the operator to initiate requests. A keyboard may be used to type in the name to be located. *Id.* at col. 3, l. 27-26. As symbols are typed, they are stored in a register and compared to the indices and main file. From this comparison process an appropriate block is extracted from the main file for display. *Id.* An alternative to use of the keyboard is the use of a photocell pen. The pen is used to select (by touch) indices displayed on the CRT screen. As each selection is made the search narrows down until a final block of entries from the main file is displayed. Id. at col. 4, l. 37-62.

Claim 29 of the '375 patent claims as one step of a method of source data capture the recording of data desired to be captured on magnetic tape after the data has been visually displayed. The Hagelbarger patent does not disclose the use of magnetic tape for any purpose. Also, the Hagelbarger patent does not disclose the recording of data. Rather, it only discloses retrieval of data already stored on large magnetic discs. Therefore, the Hagelbarger patent does not disclose an element of claim 29 of the '375 patent. The Hagelbarger invention does not anticipate claim 29 of the '375 patent.

---

[66] The discs are each 39 inches in diameter. (DX 398 at col. 3, l. 29-41).

[67] The retrieved block is converted to display symbols and a CRT video signal and stored in a "video store" buffer used for display of the block. (DX 398 at col. 8, l. 48 to col. 10, l. 32). The display symbols are generated by an array of magnetizable cores. *Id.* at col. 8, l. 56 to col. 9, l. 2.

-17-

Datapoint contends the Wang Data Translation System described in U.S. Patent 3,299,408 anticipates claim 29 of the '375 patent.[68]

Datapoint did not offer any testimony or briefing on the Wang invention with regard to anticipation. The Data Translation System is generally a system for inserting justification information into coded textual data for the control of line casting machines to produce type arranged in lines of correct length. (DX 432 at col. 1, l. 36-39, 54-57). The system reads-in coded, textual data, inserts desired justification coded data into the textual data, and then outputs the revised textual data for eventual use in some type of printer, printing machine, or the like. The Wang system also has the capacity to allow for manual intervention in the justification-information-insertion process when a decision concerning justification needs to be made that is beyond the capabilities of the Data Translation System. *Id.* at col. 1, l. 44-48.

In the Wang system, textual data contained on punched tape is read into the system, being converted to data-representative, coded signals. Id. at col. 3, l. 22-33. The data signals are then serially shifted through a certain multiple stage register. *Id.* at col. 3, l. 28 - col. 4, l. 30. As this shifting takes place, the system assigns the "weight" to be given to each character on the line, the weight being based on the character itself and the type font used for the data. *Id.* at col. 1, l. 60 - col. 2, l. 25. When the number of characters exists (given the appropriate weight) the system inserts an end-of-line signal into the serial data train at the appropriate spot. *Id.* at col. 4, l. 31-40.

---

[68] The data translation system patent was issued January 17, 1967 to An Wang and others upon an application filed August 27, 1963. (DX 432). Given the date of issuance of the Wang patent, the Data Translation System is prior art for the purposes of anticipation. *See* 35 U.S.C. § 102(b).

Also, extraneous codes such as justification codes already existing in the inputted data can be deleted so that only the justification codes assigned by the Wang system are in the output. *Id.* at col. 1, 1. 60-62; *id.* at col. 3, 1. 34-68. The revised data train continues to be shifted through to an output device, which the patent specification discloses is a tape punch machine. *Id.* at col. 4, 1. 44-48.

Although the system logic attempts automatically to determine and insert codes for an end-of-line, certain situations may exist when the system cannot determine where an end-of-line should be. Such would be the case when a break between words is not within a specified range where the text line should end. In such situations the Wang system provides for manual input from an operator for the placement of an end-of-line and/or hyphen character. *Id.* at col. 2, 1. 26-44. When the system cannot automatically insert justification information, a small CRT display is powered on and a control unit is enabled. Id. at col. 4, 1. 51-57; *id.* at col. 12, 1. 66-68. The text word around the ideal end-of-line position is displayed. The operator uses the control unit to select an appropriate hyphenation or break point. The system then inserts the justification characters hyphen, end-of-line character) at the operator-chosen point. The system then powers down the display, disables the control unit, and resumes automatic operation. *Id.* at col. 2, 1. 26-62; id. at col. 4, 1. 51 to col. 5, 1. 27.

Claim 29 of the '375 patent contains as one step of the method of source data capture claimed the recording of entered data on magnetic tape after the data has been visually displayed. This step or element is not disclosed in the Wang patent; the use of magnetic tape for recording is not disclosed. Thus the Wang patent does not disclose each and every element of claim 29, and the Wang invention does not anticipate claim 29.

-18-

Datapoint asserts that claim 29 of the '375 patent is anticipated by the cash flow computer disclosed in U.S. Patent 3,516,068, issued to Robert Howard et al. on June 2, 1970 on an application filed May 29, 1967. (DX 435).[69]

---

[69] Because the filing date of the Howard patent is more than one year before the filing date of the '375 patent, the Howard patent may be referenced as prior art with respect to anticipation. *See* 35 U.S.C. § 102(b).

Datapoint failed to offer testimony or briefing on the cash flow computer, so the court makes the following findings based on the patent. The cash flow computer described in the Howard patent is a multiple terminal system, utilizing central processing equipment for recording transactions occurring in a cash intake and dispensing system. (DX 435). Each terminal is located at a cash drawer or place where cash transactions take place, and consists basically of a keyboard entry means and a memory means. *Id.* at col. 1, 1. 12-49; *id.* at col. 2, 1. 9-34. Also included is a means for photographing currency placed in a currency slot and a means for conveying the currency to a receptacle. *Id* at col. 1, 1. 50-54.

To operate a terminal, an operator inserts an identification card into a slot in the terminal. The card actuates switches that identify the operator's identification number. *Id.* at col. 5, 1. 60-74; *id.* at col. 7, 1. 63 to col. 8, 1. 3. The keyboard can be used to enter a decimal amount corresponding to a transaction to take place and also a function, that is, whether the transaction is a cash in (+) or cash out (-) transaction. *Id.* at col. 5, 1. 60-74; *id.* at col. 6, 1. 72 to col. 7, 1. 7. The entered data is held in a buffer memory at the terminal and displayed on a Nixie tube display at the terminal. *Id.* at col. 2, 1. 21-34; *id.* at col. 7, 1. 8-17. When the information entered is correct, the operator can actuate a transmit key to transmit the information to the central processing system.[70] *Id.* at col. 2, 1. 21-34. The central processing system scans the various terminals and accepts data ready to be transmitted. See *id.* at col. 3, 1. 6-21, 57-63. The central unit prints out the transaction information on print-out and paper tape. Also, the transaction information is sent to a magnetic tape or similar output. The identification information sent (*e.g.*, the operator's identification code) is used to locate a position on the magnetic tape in order that the data at this location be read to the processing unit. The processing unit takes that data and the transaction information sent from the keyboard, updates (accumulates) the data, and then returns the updated data to the location on the magnetic tape. *Id.* at col. 3, 1. 57 to col. 4, 1. 7; *id.* at col. 11, 1. 32 to col. 12, 1. 13. Thus the magnetic tape is used for recording of accumulated data, not the raw transaction data.[71]

---

[70] This is done in an on-line data processing configuration/embodiment disclosed in the patent. (*See id.* at col. 3, 1. 57-63). In an off-line data processing configuration the data is transmitted to a transaction recorder-scanner unit, which records each transaction on a printer and a tape punch. *Id.* at col. 3, 1. 6 - 25. The paper tape is then loaded onto and read by a data reduction unit. The unit reads each transaction and accumulates those transactions in memory from which a print-out and punched tape can be obtained showing the accumulated transactions. *Id.* at col. 3:26-56.

The cash flow computer does not meet the limitations of claim 29 of the '375 patent because the patent fails to disclose two elements of the claim. first, Datapoint has not shown by clear and convincing evidence that the cash flow computer generates signals representative of alphanumeric souce data. Every reference to the generated signals in the cash flow computer indicates that the signals are representative of numeric data, *see, e.g., id.* at col. 1, 1. 21-22, col. 3, 1. 7-15, col. 10, 1. 1-6, col. 35, 1. 15-16, or function data, *see id.* at col. 1, 1. 21-22, col. 3, 1. 7-15, col. 7, 1. 3-7. The function data is not clearly alphabetic in nature.

Second, under the clear and convincing evidence standard the Howard patent does not disclose that the cash flow computer meets the claim 29 limitation of recording entered data on magnetic tape after display. The cash flow computer records accumulated data, but not the data entered and displayed as such.

Thus the cash flow computer does not disclose each and every element of claim 29 of the '375 patent and does not anticipate this claim.

-19-

Datapoint posits that claim 29 of the '375 patent is anticipated by the Editing Display System described in U.S. Patent 3,501,746, which issued March 17, 1970 upon an application filed October 27, 1965 by Michael K. Vosbury et al. (DX 388).[72] Datapoint offered neither testimony nor briefing on the editing display system with respect to anticipation. The court, therefore, relies upon the Vosbury patent in order to make the following findings and conclusions. The Vosbury system is essentially a system for receiving data as input from a keyboard or an external device such as a computer, displaying the data on a medium such as a CRT, editing the displayed data via the keyboard, and outputting the edited data to an external device such as a computer. (*See* DX 338 at col. 1, 1. 33-62). The system consists of several elements: the input/output (I/O) section, an internal memory, a display section, and an editing controller. *Id.* at col. 3, 1. 38-40.

---

[71] The '067 patent at col. 3, 1. 57 to col. 4, 1. 7 has indications that the transaction data is initially recorded on the magnetic tape. Such a reading is not correct, however, in light of the patent at col. 11, 1. 32 to col. 12, 1. 13. Alternatively, the evidence is not clear and convincing that recording of transaction data on magnetic tape takes place.

[72] The Editing Display System is, of course, prior art for purposes of anticipation given the filing and issuance dates of the patent. *See* 35 U.S.C. § 102(b).

The I/O section communicates with the keyboard or an external device, such as a computer,[73] via handshake signals, such as "data ready" or "data received." *Id.* at col. 10, 1. 10- col. 13, 1. 8. When data is received by the I/0 section for editing, the data goes through a series of registers to a buffer register and then to the system memory. *See id.* at col. 4, 1. 75 - col. 5, 1. 9; id. fig. 1.

The system memory stores information to be edited and displayed. *Id.* at col. 3, 1. 43-45. The embodiment disclosed in the patent is a recirculating memory using a delay line and a series of registers. *Id.* at col. 3, 1. 64 - col. 4:2. The editing controller, of course, controls the editing functions of the system including changing the memory data contents. *Id.* at col. 3, 1. 46-54.

The display section displays data stored in the system memory. *Id.* at col. 3, 1. 43-45. The display section includes a display controller that scans the contents of one of the memory registers. *Id.* at col. 5, 1. 35-43. The controller controls the display in accordance with display commands in the register, or, if data is present in the register, the controller causes the generation of a signal to the CRT so that the proper character is displayed. *Id.* The system also makes use of a cursor or "marker" displayed through the display section to assist the operator in editing operations. *Id.* at col. 4, 1. 3-18.

The vosbury system does not disclose the step of recording data on magnetic tape after display, which is required in the method of source data capture claimed in claim 29. It is clear from the other claims and the specification of the '375 patent, including claim 38, that claim 29 means that the step in source data capture of recording data on magnetic tape is a step integral to the data capture system, that is, that the tape recorder is part of the patented system. The Vosbury system does not disclose such a step.

---

[73] The use of a keyboard and a computer are the external devices used in describing the Vosbury system in the patent specification.

A portion of the Vosbury patent that comes closest to disclosing the recording of data on magnetic tape after display is the following:

> Moreover, data stored in a digital computer memory can be modified without knowledge of the addresses in the memory of the particular characters to be changed. An entire page is transferred from the [external] computer into the editing system, which displays it on the cathode ray tube .... The keyboard operator can then proceed to make the changes in the manner outlined above. The modified information is then transferred from the memory ... in the editing system back to the computer.
>
> Thus, the invention can be used to modify information stored in digital memories of various types, such as cores, tapes and drums. Any type of information representable by means of visible characters can be modified in this manner. This includes, for example, stored computer programs [sic], catalog-type information in data retrieval systems and information temporarily stored for use by electronic typesetters or electrically operated typewriters. In the latter category, the invention can be used for the typing of long drafts which are then revised by means of the editing system and then automatically typed in final form.

Id. at col. 4, 1. 38-57. All that this excerpt actually discloses, however, is the outputting of data, after display, to an external device or machine of some nature. The recording on magnetic tape, if any, is up to that external machine or computer; it is not an integral part of the vosbury system or its disclosed method of data capture.

Thus the Vosbury patent fails to disclose each and every element of claim 29 of the '375 patent and the Vosbury invention does not anticipate claim 29 of the '375 patent.

-20-

Datapoint contends that claim 29 of the '375 patent is anticipated by the apparatus for locating information in a magnetic tape disclosed in U.S. Patent 3,501,746, which was issued to Joseph T. McNaney on October 25, 1955 on an application filed October 17, 1952. (DX 426).[74]

No anticipation testimony concerning the McNaney apparatus was offered at trial. The patent discloses, however, that the McNaney apparatus was a vacuum-tube technology device for transferring information to and retrieving information from magnetic tape. (DX 426). The apparatus consisted of a typewriter-like input, a CRT display, a magnetic drum for temporarily storing information to be read from or recorded to magnetic tape, transducers for reading data from and writing data to the drum and tape, and vacuum tube technology circuiting and controls connecting the various elements together. *Id.; id.* at fig. 1. Information is transferred to and from the tape in "message codes," which appear to be comparable to the data records employed in the '375 patent's method of data recording. *Id.* at col. 1:29-50. The message codes have identification codes used in searching for and locating a message code. *Id.* The identification codes are recorded at predetermined locations on the tape. *Id.* Apparently, the identification code on the tape can be part of the entire message code on the tape. *Id.; id.* at col. 1, l. 38-42.

The device works as follows: an identification code can be recorded on one track of the magnetic drum (and the message code on another track) by use of the typewriter input, which apparently sends out electrical codes representative of key actuations, and by enabling the appropriate drum transducers (for the appropriate tracks) by means of a switching circuit. *Id.* at col. 1, l. 29-50; *id.* at col. 2, l. 3-7; *id.* at col. 3, l. 24-35. A control is set to cause recording of information on the tape from the drum. The drum and tape are moved in synchronism via a drive motor and gear box, and when the same identification codes simultaneously occur at the transducers of the tape and drum, that is, the codes are read simultaneously by a coincidence control circuit that compares the codes, the message code on the drum is recorded on the tape. *Id.* at col. 1, l. 29-50; *id.* at col. 3, l. 24-35. Reading information from the tape to the drum works in much the same way — an identification code is typed in and recorded on a track on the drum, and the controls and switching circuit are set appropriately — except when identification codes occur simultaneously, the message code is read from the tape and recorded on the drum. *Id.* at col. 3, 1. 3-17.

---

[74] Given that the issuance date of this product preceded the filing of the '375 patent application by more than 10 years, the McNaney apparatus disclosed in the patent is prior art for purposes of anticipation. *See* 35 U.S.C. § 102(b).

Information on a track of the drum can be displayed by enabling an appropriate transducer for the track through a switching circuit and enabling a display circuit called a code conversion circuit. *Id.* at col. 3, 1. 18-23; *id.* at col. 6, 1. 33-35.

Claim 29 claims a method of source data capture made up of four elements. The first element is the generation of coded signals representative of alphanumeric source data desired to be captured. This limitation is met by the typewriter input device of the McNaney apparatus.

The second element of claim 29 is the visual display of the data represented by the coded signals by use of the signals. In the embodiment of this element, as described in the patent specification, the signals are not used directly to produce a display, but rather are stored in a buffer memory and then read from the buffer by a display controller to produce a display. (DX 1 at col 7, 1. 18-46; *id.* at col. 9, 1. 49 to col. 10, 1. 22). The second element of claim 29 is construed accordingly. In the McNaney apparatus the data input signals are stored on the magnetic drum, comparable to the buffer in claim 29, and then read from the drum and passed through a circuit to produce a display. Thus the signals are used to display the data that they represent. The second element of claim 29, therefore, is found in the McNaney apparatus as disclosed in the McNaney patent.

The third element of claim 29 — using a buffer memory to temporarily store the data being displayed — is also found in the McNaney reference. Throughout the proceedings in this case, the parties have dealt with the terms "buffer" and "memory" conceptually as set forth in the ANSI[75] definitions of "buffers and "storage." A buffer is a storage used to compensate for a difference in rate of flow of data, or time of occurrence of events, when transmitting data from one device to another. ANSI X3.12-1966 & X3.12-1970, *reprinted*

---

[75] American National Standards Institute (DX 2363 at 42).

in DX 2363 at 46. A memory or storage is a device into which data can be entered, in which they can be held, and from which they can be retrieved at a later time. ANSI X3.12-1970, *reprinted in* DX 2363 at 65. In the McNaney apparatus the magnetic drum acts as a buffer memory, compensating between data input and display and recording and also temporarily storing data for later retrieval. Thus the third element of claim 29 is found in the McNaney reference.

The fourth element in claim 29 is recording data on magnetic tape after the data has been visually displayed. Datapoint has not shown by clear and convincing evidence that this particular step in the method of claim 29 is disclosed in the McNaney reference. Data to be displayed or recorded must be written to the drum in the McNaney apparatus first. It appears from the McNaney patent that whether the data on the drum is displayed or recorded is a function of the setting of switches on the apparatus. (DX 426 at col. 3, l. 3-35). It is not clear, however, that the display may or must occur before recording (or recording after display). The display and recording could even be simultaneous. It is not clear that recording occurs after display and the evidence does not meet the clear and convincing standard.

Because the McNaney reference does not disclose each and every element of claim 29 of the '375 patent, claim 29 is not anticipated by the McNaney apparatus.[76]

---

[76] Were claim 29 anticipated by the McNaney reference, it is clear that dependent claim 30 is not anticipated. There is no evidence or argument that a program format is used in the McNaney apparatus to generate data signals in a predetermined relative sequence. It appears that data can be entered in any sequence, but the identification code must be entered on a track separate from the message code. Claims 38 and 39, however, would be anticipated if claim 29 were anticipated. Claim 38 adds four steps to the method of claim 29. The first is searching for a particular recorded record on a tape containing a plurality of records by generating signals representing at least the beginning data characters in the record. This step is met by the McNaney apparatus searching its tape by using an identification code entered onto the drum. The second step of claim 38 is temporarily storing the search signals for each purposes. The McNaney apparatus does this, storing the identification code on the drum. The third step of claim 38 is replaying the tape to reproduce the signal records on it. This step is done in the McNaney apparatus as is the next step of comparing the temporarily stored signals with the signals reproduced from the tape. The tape in the McNaney apparatus is played with transducers reading the tape and impressing the read out on the coincidence

Datapoint contends that the inventions in U.S. Patent Nos. 4,611,307, issued September 9, 1986 ("Reach '307"), and 4,381,554 ("Reach '554), issued April 26, 1983, anticipate the patent in suit.[77] (DXS 414 & 417). Datapoint asserts that independent claim 1 of the Sycor patent and its dependencies are anticipated by the Reach '554 patent and that claims 29 and 40 are anticipated by the Reach '307 patent.

The Reach patents disclose a programmable electronic calculator: Reach '554 is a device patent, while Reach '307 is a method patent.[78] The calculator is somewhat similar in operation to the HP 9100A calculator discussed *supra* at § II(E)(5).[79] An operator may enter operands, one of four numeric operators, and parentheses to denote groupings and the calculator calculates the results accordingly. (DX 417 at 1). The Reach device has a key and switch input, a printer output, and an analyzer, which is the brains of the device. The keyboard contains numeric keys, arithmetic operator keys, mode switches, and other function keys. *Id.* at fig. 2. Each entry of an

---

control circuit, which compares the tape signals with the search signals on the drum in order to find a particular message code on the tape.

Claim 39 adds a further step of storing the temporarily stored search signals in the buffer memory. The drum in the McNaney device, as discussed above, is a "buffer memory" as used by the '375 patent, and the search signals are stored in one track of that drum. Thus the step in claim 39 is found in the McNaney apparatus.

Accordingly, were claim 29 of the '375 patent anticipated by the McNaney apparatus, claim 30 would not be, but claims 38 and 39 would be likewise anticipated by the McNaney apparatus.

[77] Despite the fact that these patents were issued several years after the '375 patent, it is not disputed that the Reach patents are prior art since the issued patents are divisions and continuations of an original application filed in June 1964 and thus have a disclosure date of June 1964. *See In re Wertheim*, 646 F.2d 527, 537 (C.C.P.A. 1981) (comparing continuation-in-part and continuation applications); 35 U.S.C. § 102(b).

[78] The specifications for the two patents are almost identical; the claims, however, are different.

[79] In fact, Hewlett-Packard was the assignee of the Reach patents. (DXS 414 & 417).

operand or operator is printed out so that entered equation data may be monitored. The results of computations entered are also printed. *Id.* at 1. The device also contains storage registers for receiving data to be used in a computation, for storing a partial or final computation, or for containing information (*i.e.*, a number) to be printed. *Id.* The storage registers are preferably recirculating, serial registers. *Id.* at col. 13, l. 3-24.

The Reach calculator was keystroke programmable. In "learn mode it could store up to 24 keystrokes in a recirculating, serial control storage register in the analyzer. *Id.* at col. 3, I. 61-66; col. 8, l. 30-34; col. 10, l. 34-51. The codes for keystrokes are stored, such codes being generated by key actuation and being stored after being processed through various registers in the analyzer. The control/storage register, as all data registers in the device, were magnetic or flip-flop registers. *Id.* at col. B, l. 20-21. The stored program could be executed by switching the device to "automatic" mode.

Depression of the square root arithmetic operation key apparently causes a program for determining square root to be inserted into the analyzer's control storage register. *Id.* at col. 6, l. 24-35. The number to be rooted is entered into a storage register, and the result is computed, stored, and printed by switching the device to "automatic" mode. *Id.* The Reach '554 patent indicates that other keys could be defined to insert other arithmetic programs into the analyzer. *See id.* at col. 6, l. 40-43.

Apparently, actuating a normal arithmetic operator key (add, subtract, multiply, divide) does not cause insertion of a program into the analyzer. Rather, through the logic of the device, actuating such a key appears to cause the contents of various registers and accumulators to be shifted, transferred, combined, inverted, and so forth to accomplish the desired result. Such operations occur by means of subcommand signals generated in the analyzer. *Id.* at col. 17, l. 50 to col. 2:1. There is a buffer register in the analyzer for temporarily holding arithmetic data entered into the device. *Id.* at col. 9, l. 26-40.

The elements of '375 claim 1, 19, 29, and 40 and the elements of Reach '554 claims 1 and 17 and Reach '307 claims 5 and 8 are similar. The claims are set out as follows, with differences between the claims indicated by underlining.

Claim 1 of the '375 patent:

> A source data entry *terminal* device for capturing and storing data for future processing or the like, comprising in combination: a keyboard data entry means for producing coded *alphanumeric* data representative of different keys upon actuation thereof; *an optical* display means for visual character read-out of such data; means for coupling coded data entered into said *terminal* to a data recorder *or reproducer means*; and a programmed microprocessor interfaced to each of said entry means, said display means and said coupling means; said microprocessor including a fixed-program *read-only memory* and a central logic unit embodying substantially all of the control logic for said entry means and display means; said *read-only* memory having a built-in program dedicating *the terminal* to a particular functional configuration and establishing an instruction set which timeshares said *central* logic unit with said entry means and display means to control the same in conformance with such functional configuration.

Claim 1 of the Reach '554 patent:

> A source data entry device for capturing and storing data for future processing or the like comprising in combination a keyboard data entry means for producing coded data representative of different keys upon actuation thereof; display means for visual character read-out of such data; *coupling* means for coupling coded data entered into said *device* to a recorder *for recording data;* and a programmed microprocessor interfaced to each of said entry means, said display means and said coupling means; said microprocessor including a fixed-program *unit* and a central logic unit embodying substantially all of the control logic for said entry means and display means; said *fixed- program unit* having a built-in program dedicating *said device* to a particular functional configuration and establishing an instruction set which time-shares said logic unit with said entry means and display means to control the same in conformance with such functional configuration.

Claim 19 of the '375 patent:

> A source data entry *terminal* device for capturing and storing data for future processing or the like, comprising in combination: a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof; *an optical* display means for visual readout of data characters entered by said keyboard means; a magnetic *tape* recorder/*reproducer* means *including at least one cassette-type magnetic tape magazine* for recording data *thereon* entered by said keyboard and read out by said display; and control means interfaced to said data entry means, said *optical* display means and said recorder/*reproducer* means and intercoupling the same for cooperative operation such that data entered by said keyboard means is visually displayed and magnetically recorded *on said cassette tape magazines.*

Claim 17 of the Reach '554 patent:

> A source data entry device for capturing and storing data for future processing or the like, comprising in combination a keyboard data entry means for producing coded alphanumeric data representative of different keys upon actuation thereof; display means for visual read-out of data characters entered by said keyboard *data entry* means; a magnetic recorder means for recording data entered by said keyboard *data entry means* and read out by said display *means*; and *microprocessor* control means interfaced to said *keyboard* data entry means, said display means and said recorder means and intercoupling the same for cooperative operation such that data entered by said keyboard *data entry* means is visually displayed and magnetically recorded.

Claim 29 of the '375 patent:

> A method of source data capture, comprising the steps: generating coded signals representative of *alphanumeric* source data desired to be captured; visually displaying the data of which *said* signals are representative *by use of such signals*; using a buffer memory to temporarily store the data being displayed; and recording the data *on magnetic tape* after the data has been visually displayed.

Claim 5 of the Reach '307 patent:

> A method of source data capture, comprising the steps *of* generating coded signals representative of source data desired to be captured; visually displaying the *source* data, of which *the coded* signals are representative, *in alphanumeric form as alphanumeric characters in response to generation of such signals*; using a buffer memory to temporarily store the data being displayed; and recording the data *in a magnetic storage unit* after the data has been visually displayed.

Claim 40 of the '375 patent:

> A method of implementing a source data entry terminal device, comprising the steps*:* connecting selected input/output peripheral components including at least a keyboard data entry *means* and a *visual data* display *means* to a buffer memory and to a central processor *organization, and* using *said* buffer memory for temporary storage of data entered by *said* keyboard *means*; *incorporating control logic for all such peripheral components in the central processor and* controlling each such component by the central processors such that said peripheral components need have substantially no local control logic of their own; and dedicating the *terminal* to a given operational configuration by incorporating a fixed program in *said* central processor.

Claim 8 of the Reach '307 patent:

> A method of implementing a source data entry device, comprising the steps *of* connecting selected input/output peripheral components, including at least a keyboard data entry *unit* and a display *unit*, to a buffer memory and to a central processors using *the* buffer memory for temporary storage of data entered by *the* keyboard *data entry unit*; *using the display unit for displaying in alphanumeric form the alphanumeric character data stored in the buffer memory* controlling each such *peripheral* component by the central processor such that *the peripheral* components need have substantially no local control logic of their own; and dedicating *the source data entry device* to a given operational configuration by incorporating a fixed program in *the* central processor.

The file histories of the Reach '554 and '307 patents show that the claims in those patents were added eight or more years after the issuance of the '375 patent. (DXS 414A (December 29, 1982), 416A (August 10, 1981)). The inference arises and the file histories indicate that the Reach patentees intentionally copied the '375 patent claims.

Datapoint argues, as did the applicants during the prosecution of the Reach patent, that because of the similarity in wording of the claims, the Reach patent claims are broader than and include the '375 patent claims. Such a conclusion is not warranted, however, until the claims have been interpreted. Proper construction of the Reach claims demonstrates that the Reach patents did not disclose each and every element of the '375 claims.

The last several elements of claim 1 of the '375 patent require the '375 terminal to have a programmed microprocessor, which microprocessor and elements have been described *supra* at § 11(E)(5) in connection with the HP 9100A. The Reach '554 patent does not disclose these elements of '375 claim 1; claim 1 of the '375 patent does not read on or encompass a device disclosed in the Reach '554 patent. *See Titanium Metals*, 778 F.2d at 781. The Reach '554 patent does not disclose the programmed microprocessor, despite claim 1 of the patent, because it does not disclose a logic unit executing a program, whether in ROM or otherwise, to control the operation of the device including the operation of the peripherals (*i.e.*, keyboard and printer). From the specification and file history of the Reach patents,[80] it is clear that the "fixed program unit" of the Reach device is either (or both) the keystroke storage memory or (and) the subcommand signal system.[81] While the keystroke storage system could be construed as a program in memory, there is not clear and convincing evidence that a keystroke program has the data transfer instructions and instructions being executed for control of the peripherals. As to the subcommand signal system, although the signals apparently are data transfer instructions and may control to some degree the printer, the signals do not appear to be executed out of memory by a logic unit as required in the '375 claim 1 programmed microprocessor. Thus although the claim language in the '375 and the Reach '554 patents is similar, the terms do not mean the same, and Reach '554 does not disclose the elements of '375 claim 1.

---

[80] The specifications of Reach '554 and '307 are almost identical. The file history reference here is to pages 14-15 of the April 9, 1985 response to October 9, 1984 office action, contained in the file history of the '307 patent. (DX 414A).

[81] The subcommand signal system appears to be the only thing that can be referred to as a "built-in program" in the "fixed program unit" of claim 1 of the Reach '554 patent.

Claim 40 of the '375 patent claims a method of implementing a source data terminal device, with the method consisting of multiple steps including that of dedicating the terminal to a given operational configuration by incorporating a fixed program in the device's central processor. The term "operational configuration," like "functional configuration," includes at least the definition and control of the peripherals of the device. It is also clear from the patent that the "fixed program" of claim 40 means essentially the same as the "fixed program" of claim 1, that is, a program in memory executed by a logic unit to control the device, with the program neither altering itself during execution nor being alterable by the operator.

Based on these definitions and the court's findings and conclusions concerning claim 1, the Reach device, as described in Reach '307, does not dedicate itself to a given operational configuration by incorporating a fixed program in a central processor. Thus the elements of claim 40 of the '375 patent are not disclosed by the Reach '307 patent.

Claim 29 of the '375 patent claims a method of source data capture comprising multiple steps including the step of recording data magnetic tape after the data has been visually displayed. The Reach method claim 5 of the '307 patent contains the limitation of recording data *in* a magnetic storage unit after the data has been displayed. From the '307 patent specification and file history,[82] it appears that the recording in a magnetic storage unit element means the recording of data a memory device of the '307 calculator, such as in the magnetic core or flip-flop control storage register. The Reach patents do not teach the recording of data *on* magnetic medium such as tape, through a peripheral device handling the medium as in the case of the '375 patent. Thus the recording of data on magnetic tape was not disclosed in the Reach patents.

---

[82] DX 414A, April 9, 1985 response to October 9, 1984 office action, at 20.

Accordingly, the Reach inventions do not anticipate claims 1, 29, and 40 of the '375 patent.

-22-

Datapoint contends that independent claims 1, 19, 24, 29, and 40 of the '375 patent are invalid under principles of obviousness and anticipation by reason of the Viatron 21 invention. The Viatron 21 was a device similar to the '375 terminal. It was developed by Viatron in parallel with the '375 device, but a patent was never sought on the Viatron 21. Accordingly, 35 U.S.C. § 102(g) is applicable to determine priority of invention between the '375 device and the Viatron 21.[83] Section 102(g) provides for the invalidation of a patent if

> before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

The court concludes that Datapoint has not proven that the Viatron 21 satisfies § 102(g) over the '375 device.

-a-

First, Datapoint failed to adduce clear and convincing evidence that the Viatron 21 was the same invention as the '375 device. It is, of course, virtually undisputed that the Viatron 21 was substantially the same device as the '375 invention: the Viatron 21 had a keyboard for data entry, a display CRT, a cassette tape data recorder, and a microprocessor executing a ROM program to run the machine. Data was entered, displayed, and verified before being recorded on tape.

---

[83] At trial Datapoint in effect conceded that 35 U.S.C. § 102(b) did not apply. (*See* Tr. 69:6). Furthermore, from the findings of fact *infra* concerning the development of the '375 device and the Viatron 21, it is clear that 35 U.S.C. § 102(a) does not apply.

The Viatron 21 had program-controlled format indicia on the display for controlling data entry. (DXS 283, 292 (*see* Tr. 68:58, 63); Tr. 68:173-179 (Bennett)). The evidence is not clear, however, concerning whether substantially all control logic of the Viatron 21 was in its central logic unit, as required in '375 claims 1 and 40, whether time-sharing occurred in the Viatron 21, as required in '375 claim 1, or whether the Viatron 21 keyboard produced coded data as required in '375 claims 1, 19, 24, and 29[84].

-b-

Apart from considerations of whether the Viatron 21 was the same invention as the '375 device, the court holds second that Datapoint has failed to show that the Viatron 21 should have priority over the '375 invention. Under the terms of § 102(g), the respective dates of conception and reduction to practice are to be considered.

> The conception of an invention is the complete performance of the mental part of the inventive act. All that remains to be accomplished, in order to perfect the act or instrument, belongs to the department of construction, not invention. It is therefore the formation, in the mind of the inventor of a *definite and permanent idea of the complete and operative invention. as it is thereafter to be applied in practice*, that constitutes an available conception, within the patent law.

Coleman v. Dines, 754 F.2d 353, 359 (Fed. Cir. 1985) (emphasis in original) (quoting *Gunter v. Stream*, 573 F.2d 77, 80 (CC.PA. 1978)). Thus every limitation of a claim must have been known to the inventor at the time of the alleged conception. *Coleman*, 754 F.2d at 359. Conception must be proven by corroborating evidence that shows that the inventor disclosed to others his completed thought so as to enable those skilled in the art to make the invention. *Id.* "Actual reduction to practice requires that the claimed invention work for its intended purpose." *Hybritech Inc. v. Monoclonal Antibodies, Inc.*,

---

[84] Although Bennett, the inventor of the Viatron 21, testified in effect that there is nothing in the '375 claims that was not contained in the Viatron 21, (Tr. 69:18-21), the court does not find his testimony to be adequate under the clear and convincing evidence standard.

802 F.2d 1367, 1376 (Fed. Cir. 1986), *cert. denied*, ___ U.S. ___, 107 S.Ct. 1606 (1987). "[C]onstructive reduction to practice occurs when a patent application on the claimed invention is filed. *Id.*

Turning to the '375 device, Irwin claims to have conceived the invention while in Majorca in August 1966. The evidence shows that Irwin disclosed the elements of the '375 invention to others, James Pennington and James Heavener, in the fall of 1966 and in January or February of 1967, respectively. (Tr. 6:11-24, 98-100). This showing, together with the court's January 20, 1987 bench ruling concerning the date of conception (Tr. 1:54), supports a date of conception of the '375 invention of February 1967.[85] After this date, Irwin engaged in activities geared toward setting up a company to develop and market the invention, and Systronics, Inc. ("Systronics"), the predecessor of Sycor, was formed in August 1967. (PX 104-05, 112-13; Tr. 5:52-53, 56-6; 6:25-32, 44, 99-105). Active development began shortly thereafter and continued up through and including the effective filing date of the '375 patent.

It is also arguable, however, that claims 1 and 40 could have a conception date as late as late August - early September 1968. Systronics originally conceived and planned that the device should have all control logic in the central logic unit of the terminal (*i.e.*) the peripherals would be logic-free), and development continued under that constraint for some time. (Tr. 37:22-23, 26-28). In May 1968 Michael Levine, co-inventor of the '375 device with Irwin, joined Systronics primarily for the purpose of designing the logic unit hardware of the device. (Tr. 36:187, 37:29). Sometime in August 1968 a programmer at Systronics told management that the software of the device could not be made to run the device peripherals and control the device also. (Tr. 36:178-179; 37:32, 35-36). Thus in the interest of expediency the decision was made in late August, or possibly early September, to redesign the device to incorporate some control logic in the peripherals of the device. (Tr. 37:32, 35-42; *see also* Tr. 10:78-79). This final change apparently led to the wording in '375 claims 1 and 40 that the central logic unit embody "substantially all" peripheral logic so that the peripherals used "substantially no" control logic of their own. There was conflicting testimony as to whether a '375 device was fully integrated and operational in November 1968. *Compare* Tr. 10:163-67 *with* 39:170-77. The device was actually reduced to practice, however, about March 1969. (Tr. 39:184).

---

[85] Subject to certain qualifications discussed *infra*.

The court finds that the '375 invention was conceived no later than February 1967 and that the conception date of claims 1 and 40 could be as late as late August - early September 1968, since those claims involve the central logic unit and (I) Levine, listed as co-inventor of the '375 device, did not arrive at Systronics until May 1968 and (2) the final decision concerning the location of the control logic was not made until late August - early September. *See Coleman*, 754 F.2d at 359 (every limitation of claim must have been known to inventor at time of conception). The device was reduced to practice in about March 1969.

With respect to the Viatron 21, the testimony of Bennett, inventor of the device, is that he conceived the Viatron 21 while working at Mitre Corp., the company that developed the AES0P-B system.[86] (Tr. 69:150,70:89). Bennett testified that he and another began "lining" the concept on index cards sometime in the spring of 1967. (Tr. 70:91-92). The device was intended ultimately to utilize metal oxide semiconductor (MOS) technology (large-scale integrated circuits), but the initial development was of a transistor-transistor logic (TTL) (semiconductor logic) machine. (*See* Tr. 68:166-67, 189). Bennett joined Viatron in January 1968 and began development work with others. (Tr. 69:140-41). Viatron had been organized a couple of months before to pursue development of a Viatron 21-type device.

The first corroboration of Bennett's testimony concerning the Viatron 21 development exists in certain Viatron internal memoranda dated May 1968 that establish certain signal specifications for interfaces between the processor and tape, display, and acoustic coupler peripherals. (DX 293). Bennett testified that his company had a working and fully integrated TTL version of their machine demonstrated at the Business Equipment Manufacturers' Association (BEMA) show in October 1968. (Tr. 68:183-84; 69:6). Press releases by Viatron for the show tend to confirm this, although NTI argues that the press releases are not credible since Systronics had made similar press releases even before it had an operational '375 device. *See* NTI's Response to Datapoint's Finding of Fact 115 at 169.

---

[86] Apparently, the Viatron 21 was based on AESOP-B concepts. (*See* DX 15 at 4).

Viatron never attempted to patent the Viatron 21 because it did not consider the technology to be proprietary. (Tr. 70:93). Viatron eventually went bankrupt, apparently because the MOS technology never came through as hoped.

The court next considers in tandem the conception and reduction to practice evidence regarding the '375 invention and the Viatron II. The court finds that Datapoint has not proven by clear and convincing evidence that the Viatron 21 invalidates the '375 patent pursuant to § 102(g). It appears that the Viatron II had been reduced to practice at the October 1968 BEMA show and thus prior to the '375 device. Nevertheless, the '375 invention may be accorded priority if it was conceived earlier than the Viatron 21 and if Irwin exercised reasonable diligence from conception to reduction to practice. *See* 35 U.S.C. § 102(g). The critical issue thus becomes the relative conception dates of the two inventions. Under the clear and convincing evidence standard, Datapoint was obligated to prove that the '375 invention was not conceived prior to the conception of the Viatron 21. This Datapoint failed to do.

As to the '375 claims other than claims 1 and 40, the February 1967 date of conception is earlier than even the earliest uncorroborated date of conception of the Viatron 21. And the evidence reflects that Irwin was diligent in setting up an organization to reduce his conception to practice.[87]

Even assuming a conception date as late as August or early September 1968 for '375 claims 1 and 40, the court does not find that Datapoint has proven by clear and convincing evidence a conception date prior to the '375 invention. While common sense would dictate that a device reduced to practice in October 1968 would be conceived substantially before that date, and certainly prior to August or September 1968, under the clear and convincing evidence standard this court must have some evidentiary predicate to ground such an inference. The Viatron 21 conception evidence is insufficient, however, under this more onerous standard.

---

[87] Datapoint does not argue, or can it, that there was any lack of reasonable diligence on the part of Irwin.

Accordingly, the court concludes that the '375 invention takes priority over the Viatron 21 invention under § 102(g).[88] Further, the Viatron 21 is not available as prior art for purposes of § 103 obviousness.

E.

The court next considers Datapoint's allegations that the '375 invention was obvious in light of the prior art.

-1-

35 U.S.C. § 103 allows a claimed invention to be held invalid

> though the invention is not identically disclosed or described as set forth in [35 U.S.C. § 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

The Supreme Court explained the method for determining obviousness in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966):

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obvious-

---

[88] Because Datapoint has not adequately shown that the Viatron 21 contained the elements of '375 claims 1 and 40 that pushed the conception date for those claims from February 1967 to late August - early September 1968, and because the '375 device and the Viatron 21 are substantially similar, the court alternatively finds and concludes that the February 1967 conception date should control for all claims in the priority contest between the '375 and Viatron 21 devices. This is supported by the evidence adduced that the change in the '375 terminal of moving some control logic to the peripherals was not innovative, but rather expedient. (*See* Tr. 37:35-42). Thus Irwin's conception of logic-free peripherals seems but a species of the genus ("substantially" no logic in peripherals) that was patented. The earlier conception date, therefore, should control, and '375 attains priority over the Viatron 21.

> ness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others [to solve the problem], etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, the inquiries may have relevancy.

Once the *Graham* findings are made, the court is to determine the obviousness of the claimed invention as a whole. The test is not whether the differences between the claimed invention and the prior art were obvious, but rather whether the claimed invention as a whole was obvious. *Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 890 (Fed. Cir. 1984). Facts underlying a determination of obviousness must be proven by clear and convincing evidence. *Carella v. Starlight Archery and Pro Line Co.*, 804 F.2d 135, 138 (Fed. Cir. 1986).

In determining obviousness the court considers what the prior art collectively suggests to one of ordinary skill in the art. *Leinoff v. Louis Milona & Sons, Inc.*, 726 F.2d 734, 739 (Fed. Cir. 1984). Teachings of the prior art, however, cannot be combined to declare an invention obvious absent some teaching, suggestion, or other incentive in the art to combine the teachings. *Carella*, 804 F.2d at 140. The invention must have been obvious at the time it was made; the court cannot use hindsight to reconstruct the invention from the prior art and say the invention was obvious. *Id.; see W.L. Gore*, 721 F.2d at 1553.

-2-

The scope of the prior art is determined by considering the nature of the problem confronting the inventor. *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1009 (Fed. Cir. 1983). The relevant art is that reasonably pertinent to the particular problem and the solving of it. *See Shatternroof Glass Corp. v. Libby-Owens Ford Co.*, 758 F.2d 613, 620 (Fed. Cir.), *cert. dism'd*, 474 U.S. 976 (1985); *see also Lindemann*, 730 F.2d at 1460.

The problem solved by the '375 invention is that of efficient batch source data entry to computers, and the court determines that the relevant art is the field- of computer design. The most persuasive support for this finding lies in the patent itself. The elements of the invention are elements used in computer design. Also, references in the patent to outside works, publications, and patents are to works and sources in the computer design field. (PX 1 at cols. 11-13).

-3-

The content of the prior art has been previously described in the court's discussion of anticipation.

-4-

In its briefing concerning level of skill, Datapoint in its proposed finding of fact 76 asks the court to find as a matter of fact that as of the date of the '375 invention, the computer art was characterized by rapid evolution of technology and innovation, a high level of technical expertise and a high degree of technological sophistication, and that the preponderance of persons engaged in the art had degrees in engineering or mathematics. In its proposed conclusion of law 19, Datapoint asks the court to conclude that the level of ordinary skill in the relevant computer art at the time of the '375 invention was high.

The court finds that the ordinary skill in the relevant computer art concerning the '375 invention was a bachelor's degree in electrical engineering along with some specialized job experience in computer engineering. In making this finding, the court recognizes that there were some active participants in the computer art with doctorates as well as some who had not attained their bachelor's degree. The court holds the ordinary skill in the computer art was not a high degree of skill in overall computer science.

-5-

The court next considers secondary considerations of obviousness.[89]

The parties advance three such considerations. First, NTI contends that while technology existed which would have solved the batch data entry problem, no one prior to the '375 patent filing had ever applied that technology to the batch data entry problem. NTI argues that the failure of others to apply such technology to the batch data entry problem is a secondary consideration which proves that the '375 device is nonobvious. NTI admits the technology existed before the '375 patent filing to achieve computer batch data entry, but argues that "rarely in the application of the *Graham* test has there been a situation where the prior art is so replete with devices and systems that would have solved the problem if only someone had thought to make the appropriate hardware and software modifications and additions." Datapoint responds that the application of this technology to the batch data entry problem was obvious, but that two purely economic factors prevented such application. Datapoint contends that IBM's dominance of the business data entry market gave IBM no incentive to replace its phenomenally successful key punch batch data entry machine. Because Datapoint cites no evidentiary support for this assertion, the court is unable to find it as fact.[90] Datapoint also argues that the application of this technology to the batch data entry problem was always obvious but such application simply had to await computer technology advances in order to be economically feasible.

---

[89] The court must always consider any evidence concerning secondary considerations en route to determining obviousness. "Indeed, evidence of secondary considerations may often be the most probative and cogent evidence in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). The court must consider secondary consideration evidence when the court considers all the evidence and not just when the court remains in doubt after considering the prior art. *Id.*

The evidence shows, and NTI admits, that the prior art was replete with technology to solve the batch data entry problem. The court is thus unpersuaded that the '375 patent constituted any special technological breakthrough. While it may be that economic factors hindered the application of the existing technology to the batch data entry problem, Datapoint's brief fails to cite any evidence supporting this contention. The court is unable to find from these assertions that the '375 device was either obvious or nonobvious, and gives the instant contentions no weight in the obviousness analysis.

The parties also address the secondary consideration of commercial success. NTI contends the concepts protected by the '375 patent attained phenomenal success as evidenced by Sycor and Datapoint sales between 1969 and 1977 in the amount of $700 million. NTI also asserts that IBM's [ ] settlement of the NTI/IBM '375 patent litigation shows the commercial success of the '375 patent. Finally, NTI argues that Irwin's nomination as a "*Computer Design* Pioneer" in 1982 on the twentieth anniversary of Computer Design magazine shows the success of the '375 patent.

---

[90] This fact is not judicially noticeable.

Datapoint responds that in order to be a meaningful indicator of obviousness, the commercial success must be directly related to the specific features of the claimed invention. Datapoint contends NTI has shown no such nexus between the specific features of the '375 machine and the $700 million in sales NTI asserts resulted from the '375 machine. Datapoint also argues that the sales resulted from Datapoint's selling general purpose computers and not from the sale of computers falling under the '375 patent.

The court holds that the '375 patent did constitute a commercially successful technology, but the court is not convinced that NTI's and Datapoint's combined $700 million in sales are tied to the '375 patent technology.

Moreover, in light of evidence that IBM settled with NTI as a cost-saving measure,[91] the court holds that the IBM/NTI settlement is of neutral probative value either in proving obviousness or nonobviousness. Irwin's award is some evidence of the commercial success of the '375 patent. On balance, the court holds that the '375 patent was commercially successful. The court holds that this commercial success, although not determinative of the issue, is some indication that the '375 patent was not obvious.

The court considers finally the secondary consideration of contemporaneous invention. Datapoint contends the Viatron 21 clearly anticipated or rendered obvious each claim of the '375 patent. In the alternative, Datapoint contends the Viatron 21 and the '375 patent were invented simultaneously and that such simultaneous invention indicates that the '375 patent was obvious. Simultaneous invention may or may not be an indication of obviousness when considered in light of all the circumstances. *Lindemann*, 730 F.2d at 1460; *see Reeves Brothers. Inc. v. U.S. Laminating Corp.*, 417 F.2d 869, 872 (2d Cir. 1969). The court has discussed the Viatron 21 in depth concerning Datapoint's anticipation and obviousness claims. *See supra* at § II(E)(22). The viatron device is substantially the same as the '375 device, and the two were invented about the same time. The court holds that the simultaneous invention of the two machines, although not determinative of the issue, is some indication that the '375 patent was obvious.

---

[91] The [ ] "cost-saving" measure must be considered in its proper perspective, as evidenced by the costs of trying a case such as the present one and any risks of liability (however unfounded) otherwise avoided.

-6-

The court next considers the differences, if any, between the prior art and the claims at issue, starting with claims 1 and 40 of the patent.

The LINC and PC[92] (which was based on the LINC) do not teach the use of read-only memory or a fixed program. The use of read-only memory was well-known in the art, however. These devices were more on the order of conventional small computers with multiple capabilities including the writing and debugging of applications programs. The LINC and PC taught connection to a data recorder means: a magnetic tape recorder on the LINC and a magnetic-tape card output on the PC, although the PC recorded processed, as opposed to entered, data. The LINC and PC disclosed centralization of logic in the devices. The LINC and PC as computers utilized their central memory as a data buffer, while the '375 invention has a microprocessor program memory and a separate buffer memory.

Other minicomputers also existed in the prior art. The HP 2116 had a magnetic tape output for data and someone tried to develop a cassette tape output for it. The HP 2116 used magnetic core, not read-only, memory, although the use of read-only memory to some extent was planned. The HP 2116 did not teach the use of a fixed program to dedicate the computer to a functional configuration, but it did centralize the machine logic to some degree. The HP 2116, like the LINC, used central memory for a buffer. Data acquisition programs had to be written for the HP 2116; in fact, the computer was more for processing of data, that is, conversion of data, than merely recording it. The HP 2116 did not clearly teach the display of entered data.

The PDP-1 and PDP-8 minicomputers used magnetic core memory, not read-only memory. They did not teach the use of a fixed program or of a buffer as used in the '375 patent. These computers also did not teach the display of entered data.

---

[92] The court's consideration of the PC is limited in accordance with note 35, *supra*.

For the reasons cited earlier concerning anticipation, *see supra* at § 11(E) (10), the DX-1 does not lend anything substantive to the obviousness determination concerning '375 claims 1 and 40.

The BR-90 did not disclose the use of read-only memory or a fixed program. It utilized its central memory as a buffer. It did not disclose coupling entered data to a data recorder, rather it just received/transferred large blocks of data from/to another computer system.

The evidence is not clear and convincing that the TC-500, that is, the Q-machine accounting computer, taught the use of read-only memory or a fixed program as contemplated in '375 claims 1 and 40, although the machine did use a disk in part in a read-only manner. The Q-machine also did not utilize a data recorder.

Three programmable calculators were considered in the prior art: the HP 9100A, the King calculator, and the Reach calculator. These calculators had keyboards for entry of coded data, that is, keystroke programs to be used by the calculator. The data could be displayed as it was entered. The data entered was held or recorded in magnetic read-write memory area in the calculator. The HP 9100A also had the capability to record the program in memory onto magnetic cards; the other calculators had no data recorder. The HP 9100A had a read-only memory that defined certain keys on the calculator; however, neither the HP 9100A nor either of the other two calculators considered had a central logic unit executing a program to control the machine and dedicate it to a functional configuration as in the '375 patent.

Considering then the differences between the cited prior art[93] and claims 1 and 40 of the '375 patent along with the other obviousness factors, including the secondary considerations, it is clear that the subject matter of claims 1 and 40 of the '375 patent would not have been obvious at the time of invention to one having ordinary skill in the art. The technology for the inventions in '375 claims 1 and 40 apparently existed at the time of invention. Were the court to use 20-20 hindsight, the inventions in claims 1 and 40 could be reconstructed from the art. At the time of the inventions, however, the inventions were not obvious.[94]

---

[93] The AESOP-B was rejected as prior art *supra* at § II(E) (2) and has not been considered under the court's obviousness determination.

The court next considers the differences between the prior art and the invention in claim 24 of the '375 patent. Datapoint sought findings on three references supporting the obviousness of method claim 24. The Viatron 21 is not properly considered as prior art; neither are the Wood & Diaz patents. The third reference, the Wolf/Marino patents, however, does disclose all the elements of claim 24 except the use of an audio recording "cassette." The Wolf/Marino device used an audio "cartridge," which was of higher quality and larger size than conventional Philips-type audio cassettes.

Considering this difference along with the other obviousness factors, the court concludes that subject matter as a whole of the invention in claim 24 would have been obvious at the time the invention was made to a person having ordinary skill in the art.

The court next considers dependent claims 25-28. In light of the obviousness factors and the cited prior art, the court concludes that the subject matter as a whole of claims 25-28 of the '375 patent would not have been obvious at the time of invention to one of ordinary skill in the art.

The court next considers the differences between the prior art and the invention in claim 29 of the '375 patent. Of course, the LINC's differences from the claim 29 invention were so minute that the ZINC anticipated claims 29-31 of the '375 patent. Such a conclusion would mean claims 29-31 were also obvious in light of the ZINC. As noted in the court's consideration of anticipation by the LINC, the evidence did not teach the storage of a program format in a buffer as in claim 32 or the searching of tape by comparing part of a data record entered with data records on the tape as in claim 38.

The PC used form filling data generation and display methods like the LINC. Display of data could occur before recording, in this case on a magnetic-tape card recorder. There was not evidence as to the PC's method of searching its magnetic-tape cards. Also, there was not sufficient evidence as to the PC's use of a buffer for holding a program format.

---

[94] Numerous Datapoint experts testified, usually in conclusory terms, that certain prior art devices made the inventions in claims 1 and 40 obvious. Nevertheless, the court concludes that the inventions were not obvious.

Another minicomputer, the HP 2116, was different in several respects from claim 29. It was more for the display of processed data as opposed to data entered via signals. Also, there was no clear and convincing evidence that the HP 2116 displayed data before recording it.

The FLIDEN/Amdahl equipment, on the other hand, was similar to the invention in claim 29. As noted in the court's findings regarding anticipation, the only element of claim 29 not disclosed in the FLIDEN/Amdahl was the recording of data on tape after display. The FLIDEN/Amdahl transmitted data to another computer after display. Also, there was no evidence as to the use of a program format in the FLIDEN/Amdahl.

The Howard cash flow computer disclosed the use of the entry, display, and buffering of data by use of data signals. After display of the data the equipment sent the data to other equipment, which may have had data recorders, but the cash flow computer did not disclose the direct recording of data on a magnetic tape recorder. There was no evidence that the cash flow computer used a program format.

The Vosbury and BR-90 devices did not have the generation of data signals, rather data signals were sent in block form to the memory of the device from external computers or equipment. Likewise, the Vosbury and BR-90 devices did not record data, but sent it out to other computers or equipment. Data signals were held in the memory and used for display while editing took place. There was not clear and convincing evidence as to the use of a program format as called for in claim 30 of the '375 patent.

The McNaney invention, although merely a vacuum-tube technology device, disclosed all but the last element of claim 29, and even as to the last element the only question was as to the order of display and recording. There was not clear and convincing evidence as to a program format being used by the McNaney device. As discussed in the court's findings on anticipation, the McNaney device did disclose the comparison search of '375 claims 38 and 39.

The Wang Data Translation System used a paper tape input and output. It also used a buffer memory for data. It did not display data as it was entered, rather a display was used only when operator input was required.

The Spergal fluoroscope has many differences from the invention of claim 29. The closest similarity appears to be the fluoroscope's memory, which, used as a buffer, can be dumped to paper tape output.

Likewise, the telephone directory system has many differences from claim 29, including that the telephone directory does not record data. The system does, however, search its magnetic disc by a comparison search method, as in claim 39, using the first data characters of a record to be found as a comparison standard. Those data characters also are held in a buffer register.

The final prior art references to be considered in connection with the obviousness of claim 29 are the Reach and HP 9100A programmable calculators. The Reach calculator stores programs in its memory register as they are entered and displayed. No buffering takes place. Also, no recording on tape or anything else other than in memory takes place. The HP 9100A does use read-write memory as a buffer prior to recording the entered program on magnetic cards. The entered keystrokes can be displayed after entry and before recording. No program format is used. Also, there was no clear and convincing evidence concerning whether the HP 9100A used the comparison search method of claim 38 of the '375 patent.

Considering then the four factors of obviousness as to claim 29 and its dependencies, the court concludes that the subject matter as a whole of claims 29-33 and 38-39 would have been obvious at the time of the invention to a person having ordinary skill in the art.

III.

LACHES

Datapoint contends NTI's present action is barred by laches. In order to prevail on this contention, Datapoint must prove, first, that NTI unreasonably and inexcusably delayed in asserting NTI's present infringement claims and, second, that NTI's delay materially prejudiced Datapoint's defense. *Mainland Industries v. Standal's Patents, Ltd.*, 799 F.2d 746, 748 (Fed. Cir. 1986). That the court has found for Datapoint today precludes a finding of material prejudice.

IV.

INFRINGEMENT

A.

The court determines patent infringement by comparing the defendant's device with the properly and previously construed patent claims in suit. *SRI International*, 775 F.2d at 1121. This entails a two-step process: first, the court determines the scope of the claims as a matter of law; second, the court makes a factual finding whether the properly construed patent claims encompass the accused structure. *Texas Instruments, Inc. v. U.S. International Trade Commission*, 805 F.2d 1558, 1562 (Fed. Cir. 1986). Whether the patentee alleges literal infringement or infringement by the doctrine of equivalents, the court follows this same two-step process. *Id.* The patentee bears the burden of proving infringement by a preponderance of the evidence. *SRI*, 775 F.2d at 1123.

When the defendant in an infringement action contends the claim language, as interpreted in light of the specification, prosecution history, and prior art, does not actually read on the defendant's device, the court must interpret the patent claim. The court construes the patent claim in light of the claim language, the other claims, the prior art, the prosecution history and he specification. The court applies the claims to the defendant's device only after the claims have first been fully construed without reference to the defendant's device. *Id.* at 1118; *see Caterpillar Tractor Co. v. Berco. S.p.A.*, 714 F.2d 1110, 1114 (Fed. Cir. 1983). While the patent law allows the inventor to be his own lexicographer, *See Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 867 (Fed. Cir. 1985), the court must construe a claim as it would be by those skilled in the art. *Id.*

Literal infringement requires the plaintiff to prove that the accused device embodies every element of the properly interpreted claims. *See Texas Instruments*, 805 F.2d at 1562. If infringement is made out, that is the end of it. *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 607 (1950). The doctrine of reverse equivalents will defeat a literal infringement claim if the defendant can show that his accused device, despite falling within the literal words of the plaintiff's patent, actually performs the same function in a substantially different way. *SRI*, 775 F.2d at 1123 (citing *Graver Tank*, 339 U.S. at 608-09).

If the accused device does not literally infringe the patent, it may still infringe the patent under the doctrine of equivalents if the court finds as a matter of fact that the accused device performs substantially the same function, in substantially the same way, to obtain substantially the same result as the claimed invention. *Graver*, 339 U.S. at 609; *SRI*, 775 F.2d at 1124. Under this doctrine, equivalence is established where a person reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was. *Thomas & Betts Corp. v. Litton Systems, Inc.*, 720 F.2d 1572, 1579 (Fed. Cir. 1983) (citing *Graver Tank*, 339 U.S. at 609). The doctrine of equivalents arose because "to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing." *Graver*, 339 U.S. at 607. Thus the doctrine of equivalents exists for the sole equitable purpose of "preventing an infringer from stealing the benefit of an invention." *Id.* at 608. The court determines equivalency by reviewing the patent's content, the prior art, the accused device, and essentially redefining the scope of the claims. *Texas Instruments*, 805 F.2d at 1572. The doctrine of equivalents cannot be reduced to a set formula. The court determines whether an accused product infringes under the doctrine of equivalents against the context of the patent, the prior art, and the particular circumstances of the case. The court should consider whether the accused product resulted from independent research. *SRI*, 775 F.2d at 1124 (citing *Graver Tank*, 339 U.S. at 609). A pioneer invention is entitled to a broad range application of the doctrine of equivalents. An invention that constitutes only a modest advance over the prior art is given a more restricted application of the equivalents doctrine. *Thomas & Betts*, 720 F.2d at 1580. Where, as here, the alleged infringer has attacked the patent's validity based on the prior art, the court has more freedom to limit the doctrine of equivalents than where the alleged infringer has not urged such invalidity. *Cf. id.*

Prosecution history estoppel may limit the application of the equivalents doctrine. This doctrine prohibits a patentee from advancing a claim construction that resurrects subject matter that the patentee surrendered while prosecuting the patent. It limits a patentee's reliance on the equivalents doctrine by preventing the patentee in an infringement action from contending either that the court interpret his patent as if limitations added by amendment were not present, or that claims the patentee abandoned during the prosecution are still present. When a patentee in an infringement suit relies on the equivalents doctrine to extend the scope of his claims, he opens the door to rebuttal based upon his prior representations to the PTO during the prosecution. *Id.* at 1579-80.

B.

-1-

The 11 families of Datapoint processors in issue in this litigation are: the 2200, version II; 5500; 1150; 1170; 6600; 1800; 3800; 1500; 1550/2150; 1560/2160; and 8600.

2200 Family

The models of the 2200 family accused of infringing are: 2218, 2222, 2226, 4220, 4240, 1108, 1131, 1132, 1133, and 1134. The 2218, 2222, and 2226 are processor units with cassette tape drives and 8K, 12K, and 16K of memory, respectively. The 1108 is a processor unit with cassette tape drives and 8K of memory. The 1108 is identical to the 2218 except for differences in the connectors on some of the printed circuit boards. The 4220 and 4240 are DATASHARE systems. They include a 2226 processor, a hard disk drive suitable for DOS.A and a 9462 multipart communications adaptor (MPCA), which interfaces the processor to multiple, interactive, local or remote 3601 terminals. The 9460/9462 MPCA provides serial, synchronous RS-232 interfaces for the terminals. The 1131, 1132, 1133, and 1134 are processor systems having 16K of memory and 1, 2, 3, or 4 diskette drives, respectively. These processors are identical to the 2226 except for differences in the connectors on some of the printed circuit boards and the replacement of the cassette tape drives with diskette drives. The 1130 series processors may be part of a MULTIFORM configuration that includes a MPCA for interfacing up to two 3600 series terminals to the processor. 5500 Family

The models of the 5500 family accused of infringing are: 5548, 4520, 4523, 4530, 4533, 4540, 4543, 5000, and 4121. The 5548 and 5000 are processor units. The 5548 has 48K of memory and dual cassette tape driver. The 5000 has 20K of memory and no mass storage devices. The 4121 is a processor system which consists of a 5000 processor and a 5 megabyte disk drive. The 4520/4523, 4530/4533, and 4540/4543, are DATASHARE single-user systems as described in PXS 587, 588, and 589, respectively. The 4520, 4530, and 4540 systems each include a 5548 processor, a hard disk suitable for DOS.A, DOS.B, and DOS.D, respectively, and up to two 9462 MPCA's for interfacing the processor to up to 16 local or remote 3601 terminals. The 4523, 4533, and 4543 are the same as the 4520, 4530, and 4540, respectively, except that the MPCA's and terminals are not included.

1150 Family

The models of the 1150 family accused of infringement are: 1152, 1153, and 1154. The 1152, 1153, and 1154 are processor systems which have 24K of memory and are equipped with 2, 3, or 4 diskette drives, respectively. The 1152, 1153, and 1154 processors are the same as the 5548 processor except for a smaller memory and the replacement of the cassette tape drives of the 5548 with diskette drives. The 1152, 1153, and 1154 processors were also offered in package systems for MULTIFORM, each of which included an MPCA for interfacing up to two 3600 series terminals to the processor.

1170 Family

The models of the 1170 family accused of infringement are: 1172, 1173, and 1174. The 1172, 1173, and 1174 are processor systems which have 48K of memory and are equipped with 2, 3, or 4 diskette drives, respectively. The 1172, 1173, and 1174 are the same as the 5548 processor except that the cassette tape drives of the 5548 are replaced by the diskette drives. The 1172, 1173, and 1174 processors were offered in DATASHARE packaged systems, which included an MPCA for interfacing terminals to the processor. Such systems can also be used with MULTIFORM with up to two 3600 series terminals.

6600 Family

The models of the 6600 family accused of infringement are: 6600, 6640, 4620, 4623, 4630, 4633, 4640, 6010, 6020, and 6040. The 6600 and 6640 are processor units with dual cassette tape drives and 128K and 256K of memory, respectively. The 6010, 6020, and 6040 are processor units having 60K, 120K, and 256K of memory and no mass storage device. The 4620/4623 and 4630/4633 are DATASHARE single-user systems as described in PXS 616 and 617. The 4620 and 4630 each include a 6600 processor, a hard disk drive suitable for DOS.A and DOS.B, respectively, and up to three 9462 MPCA's for interfacing up to 24 local or remote 3601 terminals to the processor. The 4623 and 4633 are the same as the 4620 and 4630, respectively, except the MPCA's and terminals are not included. The 4640 is a DATASHARE system which includes a 6600 processor, a hard disk drive suitable for DOS.D and up to three MPCA's for interfacing up to 24 local and remote terminals to the processor.

1800 Family

The models of the 1800 family accused of infringement are: 1802, 1804, 1812, 1814, 1816, 1817, 1818, 1819, and 1820. The 1802, 1804, 1812, and 1814 are processor systems, each having different amounts of memory and dual diskette drives. The 1816, 1817, 1818, 1819, and 1820 are processor systems, each having different amounts of memory and a single diskette drive and a cartridge disk drive. The 1818 and 1819 are each equipped with a four-port communications adaptor (FPCA) for interfacing up to four terminals to the processor. The 1820 is equipped with an external resource interface model (RIM) for interfacing that processor to an attached resource computer (ARC) system. ARC systems allowed multiple Datapoint processor systems to be networked together.

3800 Family

The models of the 3800 family accused of infringement are: 3810, 3812, 3815, 3817, 3820, and 3822. All models of the 3800 family are incapable of operating standing alone and must be interfaced to an ARC or a resource management system (RMS). RMS was an operating system that allowed multiple users on a standalone or ARC system. The 3810, 3815, and 3820 are processor units, each having different amounts of memory, an external parallel 1/0 bus for interfacing certain peripheral devices, including an external RIM for connecting the processor to an ARC system. The 3812, 3817, and 3822 are processor units, each having different amounts of memory and an internal RIM for connecting to an ARC system. These processors cannot have their own peripheral devices other than their own keyboards, CRT displays, and RIM's.[95]

1500 Family

The models of the 1500 family accused of infringement are: 1532, 1536, 1592, 1596, 1514, and 1515. The 1532 and 1536 are processor units having 32K and 60K of memory, respectively, and each are equipped with .5MB dual diskette drives. The 1592 and 1596 are the same as the 1532 and 1536, respectively, except that the 1592 and 1596 are each additionally equipped with a serial printer. The 1514 and 1515 are processor systems having 60K of memory, a single diskette drive, and a cartridge disk drive. The 1515 is additionally equipped with a FPCA for interfacing up to four terminals to that processor.

1550/2150 Family

The models of the 1550/2150 family accused of infringement are: 1559, 1552, 1553, 1554, and 1558. The OEM 2150 processor family have identical counterparts to the 1550 processor family. The 1559, 1552, and 1553 are processor units having 32K of memory and equipped with dual diskette drives of different storage capacities. The 1554 and 1555 are processor systems having 64K of memory and equipped with a single diskette drive and a hard disk drive, the 1555 being additionally equipped with a FPCA for interfacing up to four terminals to that processor. The 1558 is a processor unit having 64K of memory and equipped with two dual diskette drives.

1560/2160 Family

The models of the 1560/2160 family accused of infringement are: 1561, 1562, 1563, 1565, and 1566. The OEM 2160 processor family have identical counterparts to the models of the 1560 processor family. The 1561, 1562, 1563, 1565, and 1566 are processor units and systems having features as described in PX 749.

---

[95] Datapoint has not raised, and the court has not considered, whether this characteristic of the 3812, 3817, and 3822 processors precludes infringement of the '375 patent. *See infra* at § IV(C).

8600 Family

The models of the 8600 family accused of infringement are: 8601, 8602, 8603, 8605, 8610, 8620, 8625, 8627, 8630, 8634, 8640, and 8645. The 8601, 8602, 8603, 8604, 8610, 8620, 8625, -8627, 8630, 8634, 8640, and 8645, are all processor units and systems as described in PXS 570, 571, 758, 760, 761, and 762.

The hardware/software combinations that are accused of infringement include the following software:

Cassette DATAFORM 2 (DF2 and DF2E interpreters);
Disk-based DATAFORM 2 (DF2DOSG interpreter);
DATAFORM 11 (DF11SYS interpreter);
MULTIFORM 11 (MF11SYS interpreter);
DSGEN/DATABUS (DB11, DB15, and DB-RMS interpreters with compiled program generated with DSENTRY (DSGEN) or like program expressed in DATABUS);
DSGEN/DATASHARE (DS3A3360, DS3B3360, DS3A3600, DS393600, DS42200, DS42200X, DS35500, DS45500, DS41170, DS51170, DS46600, DS51800, DS1500, DS5, DS6, and DS-RMS interpreters with one or more compiled programs generated with DSENTRY (DSGEN) or like program expressed in DATABUS);
DATAF0RM 18 (DF18SYS interpreter); and
DATAF0PM 15 (DF15SYS interpreter).

Cassette DATAFORM 2, disk-based DATAF0RM 2, DATAF0RM 11, MULTIFORM 11, DSGEN/DATABUS, and DSGEN/DATASHARE software operates in the same manner when used in other Datapoint processors or processor systems which are capable of running that software as when it is used in the Datapoint 2200 family of processors. Except for differences set forth in PX 3491, the DATAF0RM 18 interpreter, when used in an 1800 or 3800 family processor system, operates in the same manner as DATAFORM 11. Except for a few differences in basic field check criteria and basic field edit criteria, and the availability of field highlighting and a larger form, DATAFORM 15, when used in a Datapoint 1500, 1550, or 1560 system, operates in the same manner as DATAF0RM 11. Except for cassette DATAFORM 2 (DF2, DF2E), each of the Datapoint software in question runs under an appropriate disk operating system (DOS) in a Datapoint processor system equipped with one or more disk or diskette drives. The DOS that are accused of infringement in hardware-software combinations are: DOS.A, DOS.B, DOS.C, DOS.D, DOS.E, DOS.G, DOS.H, DOS.K, and RMS. Cassette DATAF0RM 2 (DF2, DF2E) does not require any operating system for its use. ARC systems generally run under DOS.D. In some instances, however, an ARC system consisting of 1800/3800 family processors can run under DOS.G, an ARC system consisting of 1560 family processors can run under DOS.H, or an ARC system consisting of 8600 family processors can run under RMS.

DATAFORM I and II

DATAFORM I was a software system for the Datapoint 2200. Datapoint described the system as providing the maximum capability for the Datapoint 2200 for data entry systems. DATAFORM I included a form generator for creating a form without programming, a configurator, which permitted flexible combination of forms, and a DATAFORM data entry interpreter for providing the Datapoint 2200 with data entry, recording, and related functions under the control of a form created with the form generator. DATAFORM I was upgraded to DATAFORM II with the addition of the Level II field programming language. After DATAFORM I, all subsequent versions of DATAFORM, including DF2, DF2E, DF2DOSG, and DF11SYS, are similar in that they all have two levels —Level I and Level II. In Level I a form generator program is used to define the form and any basic field checks and field edits to be applied to the data entered into the fields of the form and to assign any field programs to such fields. In Level II a text editor is first used to enter field programs for extended field checks and field edits using the DATAFORM field programming language. A DATAFORM compiler is then used to compile the field programs, which are then merged into the form using the form generator. The Datapoint processor application program used for form-filling/batch entry consists of a DATAFORM interpreter and a form.

MULTIFORM

MULTIFORM is a multi-user version of DATAFORM. MULTIFORM allows up to three operators concurrently to carry out different form-filling batch data entry jobs on a single Datapoint processor system having up to two Datapoint 3600 series terminals. Operation of MULTIFORM from the standpoint of form generation, field programming, and data entry and recording is similar to DATAFORM except that the maximum number of fields permitted in a form and the length of the field programs associated with each form are less than in DATAFORM.

DATABUS

DATABUS is high-level, business-oriented programming language for the Datapoint 2200. DATABUS application programming requires first using a text editor program for entering the source program expressed in DATABUS source statements. A DATABUS compiler program is then used to convert the source program into a corresponding program using intermediate object code. A DATABUS interpreter program is finally used to translate and execute the intermediate object code program. DATABUS is referred to as an "interpretive language" because an interpreter is used to execute the program originally expressed in DATABUS source statements.

DATASHARE

DATASHARE is a software system for the Datapoint 2200 that permits the simultaneous execution of up to eight DATABUS programs, each dealing with its own terminal. DATASHARE is an interpreter that runs under the Datapoint DOS and all program executions in DATASHARE occur in the DATABUS language. DATASHARE software was developed for the Datapoint 2200 Version II equipment with at least 16K of memory, a hard disk, and a MPCA. The DATASHARE interpreter running under the DOS timeshares the Datapoint 2200 among the interactive terminals interfaced to the processor through the MPCA to execute the programs running at each of the terminals. In a DATASHARE system the program running in the processor controls the operation of the terminals interfaced to the processor.

DSGEN

DSGEN is a package of three DATABUS programs whose purpose is to generate DATABUS application programs for data entry, updating a data file and printing a data file. DSGEN includes a program called DSENTRY, which allows a user to create an applications program in DATABUS source code for form-filling batch data entry without having to program in DATABUS code. DSENTRY provides the user with the capability to define a data entry form, a variety of field checks and field edits for each field in the form and the sequence in which the fields in the form are to be entered with data. The program generated with DSENTRY may be compiled with a DATABUS compiler and the compiled program may then be executed with a DATABUS or DATASHARE interpreter.

The exhibits PX 240-50 that follow, which were introduced into evidence to assist the court in its analysis of the case, set forth the combinations of Datapoint hardware and software that NTI alleges infringe the '375 patent. In exhibits PX 251-61, which also follow, NTI sets forth the claims of the '375 patent alleged to be infringed by the Datapoint hardware-software combinations.

DATAPOINT 2200

MODEL CODES	CASSETTE DATAFORM 2	DISK-BASE DATAFORM 2	DATAFORM 11	MULTIFORM11
2218(8K)	DF2			
2222(12K)	DF2,DF2E			
2226(16K)	DF2,DF2E	DF2DOSG/DOS.A, B,C	DF11SYS/DOS.A, B,C	MF11SYS[1]/DOS.A, B,C
4220(16K)	DF2,DF2E	DF2DOSG/DOS.A	DF11SYS/DOS.A	MF11SYS[1]/DOS.A
4240(16K)	DF2,DF2E	DF2DOSG/DOS.B	DF11SYS/DOS.B	MF11SYS[1]/DOS.B
1108(8K)	DF2			
1131(16K)		DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C
1132(16K)		DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C
1133(16K)		DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C
11 (16K)		DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C

[1] When equipped with a 9460/9462 MPCA and one or more 3600 series terminals.

DATAPOINT 5500

PX____

MODEL CODES	CASSETTE DATAFORM2	DISK-BASE DATAFORM2	DATAFORM11	MULTFORM11
5548(48K)	DF2,DF2E	DF2DOSG/DOS.A, B,C,D,E,ARC*	DF11SYS/DOS.A, B,C,D,E,ARC*	MF11SYS[1]/DOS.A, B,C,D,E,ARC*
4520(48K)	DF2,DF2E	DF2DOSG/DOS.A, E,ARC*	DF11SYS/DOS.A, E,ARC*	MF11SYS[1]/DOS.A, E,ARC*
4523(48K)	DF2,DF2E	DF2DOSG/DOS.A, E,ARC*	DF11SYS/DOS.A E,ARC*	MF11SYS[1]/DOS.A, E,ARC*
4530(48K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*
4533(48K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*
4540(48K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*
4543(48K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*

* When equipped with a 9483 RIM and used as an Applications Processor in an ARC System having a File Processor operating under DOS.D

[1] When equipped with a 9460/9462 MPCA and one or more 3600 series terminals.

PX ____

DATAPOINT 1150

MODEL CODES	DISK-BASE DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/DATABUS
1152(24K)	DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C	DB11[1]/DOS.C
1153(24K)	DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C	DB11[1]/DOS.C
1154(24K)	DF2DOSG/DOS.C	DF11SYS/DOS.C	MF11SYS[1]/DOS.C	DB11[1]/DOS.C

---

[1] When equipped with a 9460/9462 MPCA and one or more 3600 series terminals with specific numeric pad option.

[1] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS and compiled with DBCMP or DBCMPLUS.

DATAPOINT 1170

PX____

MODEL CODES	DISK-BASE DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/DATABUS
1172(48K)	DF2DOSG/DOS.C ARC*	DF11SYS/DOS.C ARC*	MF11SYS[1]/DOS.C ARC*	DB11[1]/DOS.C ARC*
1173(48K)	DF2DOSG/DOS.C ARC*	DF11SYS/DOS.C ARC*	MF11SYS[1]/DOS.C ARC*	DB11[1]/DOS.C ARC*
1174(48K)	DF2DOSG/DOS.C ARC*	DF11SYS/DOS.C ARC*	MF11SYS[1]/DOS.C ARC*	DB11[1]/DOS.C ARC*

* When equipped with a 9483 RIM and used as an Applications Processor in an ARC System.

[1] When equipped with a 9460/9462 MPCA and one or more 3600 series terminals.

[1] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS and compiled with DBCMP or DBCMPLUS.

DATAPOINT 6600

PX____

MODEL CODES	CASSETTE DATAFORM2	DISK-BASE DATAFORM2	DATAFORM11	MULTFORM11
6600(128K)	DF2,DF2E	DF2DOSG/DOS.A, B,C,D,E,ARC*	DF11SYS/DOS.A, B,C,D,E,ARC*	MF11SYS[1]/DOS.A, B,C,D,E,ARC*
6640(256K)	DF2,DF2E	DF2DOSG/DOS.A, B,C,D,E,ARC*	DF11SYS/DOS.A, B,C,D,E,ARC*	MF11SYS[1]/DOS.A, B,C,D,E,ARC*
4620(128K)	DF2,DF2E	DF2DOSG/DOS.A, E,ARC*	DF11SYS/DOS.A E,ARC*	MF11SYS[1]/DOS.A, E,ARC*
4623(128K)	DF2,DF2E	DF2DOSG/DOS.A, E,ARC*	DF11SYS/DOS.A, E,ARC*	MF11SYS[1]/DOS.A, E,ARC*
4630(128K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*
4635(128K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*
4640(128K)	DF2,DF2E	DF2DOSG/DOS.D, ARC*	DF11SYS/DOS.D, ARC*	MF11SYS[1]/DOS.D, ARC*

* When equipped with a 9483 RIM and used as an Applications Processor in an ARC System having a File Processor operating under DOS.D

[1] When equipped with a 9460/9462 MPCA and one or more 3600 series terminals.

DATAPOINT 1800

MODEL CODES	DATAFORM18	DSGEN/DATABUS	DSGEN/DATASHARE
1802(64K)	DF18SYS/DOS.G,ARC*	DB11[¶]/ARC*	DS51800[1,¶]/DOS.G,ARC*; DS5[2,¶]/DOS.G,ARC*; DS6[3,¶]/DOS.G,ARC*
1804(128K)	DF18SYS/DOS.G,ARC*	DB11[¶]/ARC*	DS51800[1,¶]/DOS.G,ARC*; DS5[2,¶]/DOS.G,ARC*; DS6[3,¶]/DOS.G,ARC*
1812(64K)	DF18SYS/DOS.G,ARC*	DB11[¶]/ARC*	DS51800[1,¶]/DOS.G,ARC*; DS5[2,¶]/DOS.G,ARC*; DS6[3,¶]/DOS.G,ARC*
1814(128K)	DF18SYS/DOS.G,ARC*	DB11[¶]/ARC*	DS51800[1,¶]/DOS.G,ARC*; DS5[2,¶]/DOS.G,ARC*; DS6[3,¶]/DOS.G,ARC*

[*] When equipped with a 9483 RIM and used as an Applications Processor in an ARC System having a File Processor operating under DOS.D.

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP or DBCMPLUS.

[1] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600 series terminals.

[2] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600/3670 series terminals.

[3] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600/3670/8200/8220 series terminals.

[4] When equipped with one or more 3360/3600/3670 series terminals connected the internal FPCA of a 9320 disk.

[5] When equipped with one or more 3360/3502/3600/3670/8200/8220eries terminals connected to the internal FPCA's of one or more 9320 disks.

PX____

DATAPOINT 3800

MODEL CODES	DATAFORM18	DSGEN/DATABUS	DSGEN/DATASHARE
3810(60K)	DF18SYS/ARC*	DB11[¶]/ARC*	DS51800[1,¶]/ARC*;DS5[2,¶]/ARC*; DS6[¶]/,ARC*;DS(RMS)[4,5]/ARC**
3812(60K)	DF18SYS/ARC*	DB11[¶]/ARC*	
3815(90K)	DF18SYS/ARC*	DB11[¶]/ARC* DB(RMS)[5]/ARC**	DS51800[1,¶]/ARC*;DS5[2,¶]/ARC*; DS6[3,¶]/,ARC*;DS(RMS)[4,5]/ARC**
3817(90K)	DF18SYS/ARC*	DB11[¶]/ARC*; DB(RMS)[5]/ARC**	
3820(120K)	DF18SYS/ARC*	DB11[¶]/ARC* DB(RMS)[5]/ARC**	DS51800[1,¶]/ARC*;DS5[2,¶]/ARC*; DS6[3,¶],/,ARC*;DS(RMS)[4,5]/ARC**
3822(120K)	DF18SYS/ARC*	DB11[¶]/ARC*; DB(RMS)[5]/ARC**	

* When used as an Applications Processor in an ARC System having a File Processor operating under DOS.D.

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP or DBCMPLUS.

[1] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600 series terminals.

[2] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600/3670 series terminals.

[3] When equipped with a 9460/9462 MPCA and one or more 3360/3502/3600/3670/8200/8220 series terminals.

[4] When equipped with a 9460/9462 MPCA and one or more 3600/8200/8220 series terminals.

[5] Requires one or more data entry programs written in RMS DATABUS language and compiled with the RMS DATABUS compiler.

** When used as an Applications Processor in an ARC System having a File Processor operating under RMS.

DATAPOINT 1500

PX____

MODEL CODES	DATAFORM15	DSGEN/DATABUS	DSGEN/DATASHARE
1532(32K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[1,¶]/DOS.H
1536(60K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[2,¶]/DOS.H
1592(32K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[1,¶]/DOS.H
1596(60K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[2,¶]/DOS.H
1514(60K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[2,¶]/DOS.H
1515(60K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[3,¶]/DOS.H

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP15, DBCMP or DBCMPLUS.

[1] When equipped with 6674 memory ugrade, 9320 disk drive with FPCA and one or more 3600/8200 series terminals.

[2] When equipped with 9320 disk drive with FPCA and one or more 3600/8200 series terminals.

[3] When equipped with one or more 3600/8200 series terminals connected to the FPCA provided with the processor.

DATAPOINT 1550/2150*

PX____

MODEL CODES	DATAFORM15	DSGEN/DATABUS	DSGEN/DATASHARE
1559(32K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[1,¶],/DOS.H
1552(32K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[1,¶],/DOS.H
1553(32K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[1,¶],/DOS.H
1554(64K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[2,¶],/DOS.H
1555(64K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[3,¶],/DOS.H
1558(64K)	DF15SYS/DOS.H	DB15[¶]/DOS.H	DS1500[2,¶],/DOS.H

[*] OEM version of the Datapoint 1550 having models identical to corresponding 1550 models.

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP15, DBCMP or DBCMPLUS.

[1] When equipped with 6674 memory upgrade, 9320 disk drive with FPCA and one or more 3600/8200 series terminals.

[2] When equipped with 9320 disk drive with FPCA and one or more 3600/8200 series terminals.

[3] When equipped with one or more 3600/8200 series terminals connected to the FPCA provide with the processor.

PX____

DATAPOINT 1560/2160[§]

CODES	DATAFORM15	DSGEN/DATABUS	DSGEN/DATASHARE
1561(128K)	DF15SYS/DOS.H,ARC[*]	DB15[¶]/DOS.H,ARC[*]	DS1500[†,¶],/DOS.H,ARC[*]
1562(64K)	DF15SYS/DOS.H,ARC[**]	DB15[¶]/DOS.H,ARC[**]	DS1500[†,¶]/DOS.H,ARC[**]
1563(64K)	DF15SYS/DOS.H,ARC[**]	DB15[¶]/DOS.H,ARC[**]	DS1500[†,¶],/DOS.H,ARC[**]
1565(64K)	DF15SYS/DOS.H,ARC[**]	DB15[¶]/DOS.H,ARC[**]	DS1500[†,¶],/DOS.H,ARC[**]
1566(64K)	DF15SYS/DOS.H,ARC[**]	DB15[¶]/DOS.H,ARC[**]	DS1500[†,¶],/DOS.H,ARC[**]

[§] OEM version of the Datapoint 1560 having models identical to corresponding 1560 models.

[*] When used as an Applications Processor in an ARC System having a File Processor operating under DOS.H.

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP15, DBCMP or DBCMPLUS.

[†] When equipped with one or more 3600/8200/8220 series terminals connected to the ICA or optional 0253/0653 MFC or 9320 MPCA.

[**] When equipped with an optional 0252/0652 RIM and used as an Applications Processor in an ARC System having a File Processor operating under DOS>H> The same ARCNET may also have a File Processor operating under DOS.D.

DATAPOINT 8600

MODEL CODES	DSGEN/DATABUS	DSGEN/DATASHARE
8601(128K)	DB11[¶]/ARC*;DB(RMS)[$]/ARC**	DS5[1,¶]/ARC*;DS6[1,¶]/ARC*;DS(RMS)[1,$]/ARC**
8602(128K)	DB11[¶]/ARC*;DB(RMS)[$]/ARC**	DS5[1,2,¶]/ARC*;DS6[1,2,¶]/ARC*;DS(RMS)[2,$]/ARC**
8603(128K)	DB11[¶]/ARC*;DB(RMS)[$]/ARC**	DS5[1,¶]/ARC*;DS6[1,¶]/ARC*;DS(RMS)[1,$]/ARC**
8605(256K)	DB11[¶]/ARC*;DB(RMS)[$]/ARC**	DS5[1,2,¶]/ARC*;DS6[1,2,¶]/ARC*;DS(RMS)[2,$]/ARC**
8610(256K)	DB11[¶]/DOS.K,ARC*; DB(RMS)[$]/ARC**	DS5[1,2,¶]/DOS.K,ARC*;DS6[1,2,¶]/DOS.K,ARC*; DS(RMS)[2,$]/ARC**
8620(128K)	DB11[¶]/DOS.K,D,ARC*; DB(RMS)[$]/RMS,ARC**	DS5[1,2,¶]/DOS.K,D,ARC*;DS6[1,2,¶]/DOS.K,D,ARC*; DS(RMS)[2,$]/RMS,ARC**
8625(128K)	DB11[¶]/DOS.K,D,ARC*; DB(RMS)[$]/RMS,ARC**	DS5[1,2,¶]/DOS.K,D,ARC*;DS6[1,2,¶]/DOS.K,D,ARC*; DS(RMS)[2,$]/RMS,ARC**

* When used as an Applications Processor in an ARC System having a File Processor operating under DOS.D.

[1] When equipped with a 3600 or 8200 series terminal connected to the serial I/O port.

[¶] Requires one or more data entry programs generated with DSENTRY of DSGEN or written in the DATABUS language, and compiled with DBCMP or DBCMPLUS.

[$] Requires one or more data entry programs written in RMS DATABUS language and compiled with the RMS DATABUS compiler.

** When used as an Applications Processor in an ARC System having a File Processor operating under RMS..

[2] When equipped with one or more 3600 or 8200 series terminal connected to one or more internal 0103/0603 MPCA's or optional external 9462 MPCA's.

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 2200

MODEL CODES	CASSETTE DATAFORM2	DISK-BASED DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/ DATABUS	DSGEN/ DATASHARE
2218	1,3,5-7,10-11, 15-20,22,24-33, and 35-42					
2222	1,3,5-7,10-11, 15-20,22,24-33, and 35-42					
2226	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4220	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4240	1,3,5-7,10-11, 15-20,22,24-33 and 35-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	1,3,5,7,10,11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42

* Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is directly recorded on an ARC File Processor disk.

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 5500

MODEL CODES	CASSETTE DATAFORM2	DISK-BASED DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/ DATABUS	DSGEN/ DATASHARE
5548	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4520	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4523	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	
4530	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35. and 40-42
4533	1,3,5-7,10-11, 15-20,22,24-33 and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	

* Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is directly recorded on an ARC File Processor disk.

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 1150

MODEL CODES	DISK-BASED DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/ DATABUS
1152	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	1,3,5,7,10-11. 15-18,29-33,35, and 37-42	1,3,5,7,10-11, 15-18,29-33.35. and 37-42	29-31,35, and 40-42
1153	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42
1154	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	1,3,5,7,10-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 1170

MODEL CODES	DISK-BASED DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/ DATABUS	DSGEN/ DATASHARE
1172	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
1173	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
1174	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42

---

* Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is directly recorded on an ARC File Processor disk.

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 6600

MODEL CODES	CASSETTE DATAFORM2	DISK-BASED DATAFORM2	DATAFORM11	MULTIFORM11	DSGEN/ DATABUS	DSGEN/ DATASHARE
6600	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
6640	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4620	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42
4623	1,3,5-7,10-11, 15-20,22,24-33, and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	
4630	1,3,5-7,10-11, 15-20,22,24-33 and 35-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	*1,3,5,7,9-11, 15-18,29-33,35, and 37-42	29-31,35, and 40-42	29-31,35, and 40-42

* Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is directly recorded on an ARC File Processor disk.

PX__

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 1800

MODEL CODES	DATAFORM18	DSGEN/DATABUS	DSGEN/DATASHARE
1802	*1,3,5,7,9-11,15-18 29-33, 35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1804	*1,3,5,7,9-11,15-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1812	*1,3,5,7,9-11,15-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1814	*1,3,5,7,9-11,15-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1816	*1,3,5,7,9-1115-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1817	*1,3,5,7,9-1115-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1818	*1,3,5,7,9-11,15-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
1819	*1,3,5,7,9-11,15-18 29-33,35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42

* Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is recorded directly on an ARC File Processor disk.

PX ___

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 3800

MODEL CODES	DATAFORM18	DSGEN/DATABUS	DSGEN/DATASHARE
3810	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
3812	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	
3815	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
3817	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	
3820	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	29-31,35 and 40-42
3822	1,3,9-11,15,16,29-33 35 and 37-42	29-31,35 and 40-42	

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375

PX ___

DATAPOINT 1500

MODEL CODES	DATAFORM15	DSGEN/DATABUS15	DSGEN/DATASHARE1500
1532	1,3,5,7,10-11, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1536	1,3,5,7,10-11 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1592	1,3,5,7,10-11, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1596	1,3,5,7,10-11 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1514	1,3,5,7,10-11, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1515	1,3,5,7,10-11 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375 PX ____
DATAPOINT 1550/2150*

MODEL CODES	DATAFORM15	DSGEN/DATABUS15	DSGEN/DATASHARE1500
1559	1,3,5,7,10-12, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1552	1,3,5,7,10-12, 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1553	1,3,5,7,10-12, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1554	1,3,5,7,10-12, 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1555	1,3,5,7,10-12, 15-18,29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44
1558	1,3,5,7,10-12, 15-18, 29-33,35, 37-42 and 44	29-31,35 and 40-42 44	29-31,35 and 40-42 44

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375 PX ____

DATAPOINT 1560/2160[$]

MODEL CODES	DATAFORM15	DSGEN/DATABUS15	DSGEN/DATASHARE1500
1561	*1,3,5,7,9-12, 15-18,29-33,35, 37-42 and 44	29-31,35, 40-42 and 44	29-31,35, 40-42 and 44
1562	*1,3,5,7,9-12, 15-18,29-33,35, 37-42 and 44	29-31,35, 40-42 and 44	29-31,35, 40-42 and 44
1563	*1,3,5,7,9-12, 15-18,29-33,35, 37-42 and 44	29-31,35, 40-42 and 44	29-31,35, 40-42 and 44
1565	*1,3,5,7,9-12, 15-18,29-33,35, 37-42 and 44	29-31,35, 40-42 and 44	29-31,35, 40-42 and 44
1566	*1,3,5,7,9-12, 15-18,29-33,35, 37-42 and 44	29-31,35, 40-42 and 44	29-31,35, 40-42 and 44

[$] OEM version of the Datapoint 1560 having models identical to corresponding 1560 models.

[*] Claims 5, 7, 17 and 18 do not apply if an ARC File Processor disk is used for recording the data being entered; claim 9 applies only if the data being entered is recorded directly on an ARC File Processor disk.

PX ______

APPLICABLE CLAIMS OF SYCOR PATENT NO. 3,760,375
DATAPOINT 8600

MODEL CODES	DSGEN/DATABUS	DSGEN/DATASHARE
8601	29-31,35 and 40-42	29-31,35 and 40-42
860	29-31,35 and 40-42	29-31,35 and 40-42
8603	29-31,35 and 40-42	29-31,35 and 40-42
8605	29-31,35 and 40-42	29-31,35 and 40-42
8610	29-31,35 and 40-42	29-31,35 and 40-42
8620	29-31,35 and 40-42	29-31,35 and 40-42
8625	29-31,35 and 40-42	29-31,35 and 40-42
8627	29-31,35 and 40-42	29-31,35 and 40-42
8630	29-31,35 and 40-42	29-31,35 and 40-42

C.

The court recognizes that NTI has the burden of proving by a preponderance of the evidence that Datapoint has infringed the '375 patent by Datapoint's hardware-software equipment combinations. Nevertheless, Datapoint has purported seriously to challenge NTI's expert testimony in six areas. The court has therefore determined to approach the infringement issues, not from the standpoint of NTI's affirmative assertions, but from Datapoint's defensive assertions. except to the extent the court finds non-infringement in its findings below, the court is satisfied that, were the patent valid and enforceable, NTI's evidence is otherwise sufficient to prove infringement by a preponderance of the evidence.

-1-

Datapoint first contends that its equipment does not infringe certain claims of the '375 patent because the equipment does not use read-only memory as called for in the '375 claims. It is undisputed that the Datapoint hardware-software combinations accused of infringement utilize read-write memories. NTI contends that "fixed-program read-only memory," as used in the '375 patent, means any memory that cannot be written to as well as any memory that contains a fixed program, that is, a program that does not alter itself during execution. NTI argues that because a fixed program does not alter itself during execution, a memory, even a read-write memory, with a fixed program in it acts as a read-only memory. NTI posits that construing "read-only memory" in the term "fixed-program read-only memory" to mean a memory without a write mechanism makes the adjective "fixed-program" superfluous.[96]

Claim interpretation is a question of law. *Loctite*, 781 F.2d at 866. To ascertain the true meaning of disputed claim language, the court should resort to the claims at issue, the specification, and the prosecution history of the patent. *Id.* at 867. The claims should be construed as they would by those skilled in the art. *Id.*

---

[96] NTI makes its argument one of claim interpretation. NTI does not contend that a read-write memory acting as a read-only memory comes within the claims of the '375 patent under the doctrine of equivalents. Accordingly, the court has not considered the matter under this doctrine.

In considering these factors in connection with the term "fixed-program read-only memory," the court notes that the abstract of the '375 patent states that the invention's read-only memory is a "wired read-only memory" and states that the functional configuration of the programmed microprocessor (composed of the wired read-only memory and central logic unit) can be altered by changing the "hardwired read-only memory." The '375 patent specification, as amended by the June 4, 1974 certificate of correction, states that the invention includes a:

> wired *or like* read-only memory containing a hardwired *or otherwise fixed* program designed for a particular functional application and dedicating the terminal to that application, wherein the enter [sic] purpose and operation of the machine can be completely revised *merely* by substitution of a different read-only memory configuration, containing a different hardwired *or fixed* program dedicating the terminal to a different function without the necessity of *extensively* redesigning or modifying *all or most of* the operational and control logic.

(PX 1 at col. 2, 1. 11-20) (the underlined words were added by the certificate of correction, and the word "merely," enclosed by asterisks, was thereby deleted).

The '375 patent specification elsewhere refers to the "hardwired read-only memory" *id.* at col 2, 1. 21 and states: "the data entry terminal of the invention therefore comprises ... a wired read-only memory ...." *Id.* at col. 2, 1. 35. The '375 patent also refers to "a wired read-only memory (hereinafter ROM)," *id.* at col. 4, 1. 3 and states that "the hardwired program of the ROM dedicates the entire terminal to a given functional configuration, which may be changed simply by substituting a different hardwired content." *Id.* at col. 4, 1. 35-39.

The patent, as corrected, elsewhere states:

> the hardwired *read only* *read out* memory 38 is a component part of the invention which is of extreme significance and importance to the concept on which the invention is based. That is, not only is it important to that concept to have a read-only memory which dedicates the device to a particular operational configuration, but it is also important to embody the read-only memory in *the* form like that of a wired device, preferably as

> a plug-in module or series of plug-in circuit boards together comprising such a module. This is so because, while *a* *the* wired *or like* ROM *of the form just mentioned* is unalterable by the operator, it is nonetheless an interchangeable component allowing the machine to be rededicated by changing only the wired-in program of the ROM, i.e., by changing the read-only memory module, under penalty of only modest expense when compared to the conventional approach of designing particular logic and memory capabilities for each different functional application and environment.

Id. at col. 8, l. 5-23 (the underlined words were added by the certificate of correction, and the words enclosed by asterisks were deleted).

The '375 patent, in describing the function and structure of the ROM states:

> the ROM must store a particular and individual set of micro-instructions (data transfer logic) for machine operation satisfying a given functional configuration. Such micro-instructions are embodied in a specific multiple winding set representing the ultimate translation of a program for the desired functional configuration which was originally written in Fortran-level machine language and which has been translated into RON winding requirements. For the typical type of application, as indicated by some of the specific examples set forth above, the ROM may be implemented from 16 individual pages of 256 eight- bit words per page, preferably with each page being embodied in a plug-in circuit board carrying E-core (for example) posts. Each of the wires in the memory may contain four words, and thus each page may include 64 wires wound, for example, about 16 paths and 16 posts. The first eight pages of the wired ROM may be dedicated to the microinstructions for the central logic unit which establish the machine routine and dedicate the terminal to a given use, while the other eight pages may be used to store the key codes and display character set used in carrying out the micro-instructions of the first eight pages. *Id.* at col. 8, l. 28-51.

The '375 patent, in describing the central logic unit of the invention, states that the central logic unit "must be capable of interpreting the micro-instruction sequences wired into the ROM . . ." *Id.* at col. 9, I. 15-16.

In an amendment to the '375 patent application received August 31, 1972, the applicants added the following prior art reference in response to the PTO examiner's request for specific details of the read-only memory (PX 2 at 88, 119-20):

> Furthermore, considerable technology relative to hardwired read-only memories, such as are used in the practice of the present invention, is available in an article entitled "The Bruid Transformer Memory" by W. H. Aldrich and R. L. Alonso (IEEE Transactions on Electronic Computers, August 1966) [(DX 361)] and in an article entitled "The Rope Memory: A Permanent Storage Device," by P. Kuttner (Proceedings AFIPS, 1963, Fall Joint Computer Conference) [(DX 362)].

(PX 1 at col. 12, 1. 60 to col. 13, 1. 1). These references do not indicate that a read-only memory can be a read-write memory used in a read-only mode.

Claim 1 of the '375 patent includes as an element a "fixed- program read-only memory ... said read-only memory having a built-in program dedicating the terminal to a particular functional configuration ....." Claim 22 of the '375 patent claims "a fixed-program microprocessor having a read-only memory means."

In the prosecution history of the '375 patent the patent applicants attempted to distinguish certain art by stating that "[t]he claimed device of the present application is rigidly configured, and can be reconfigured, by the *physically-interchangeable* read-only memory," (PX 2 at 51) (emphasis in original), and that the invention could be "reconfigur[ed] ... by physically changing the read-only memory," *id.* at 52.

The prosecution history also contains an affidavit of Scott. *Id.* at 92-112. Scott's affidavit explains the technology of hard-wired read-only memory as it applied to the '375 patent. *Id.* at 108-11. The patent applicants chose read-only memory for the invention, rather than read-write memory, because read-only memory was cheaper and it provided security for its contents. (Tr. 13:169-70; 37:40).

From the evidence the court finds that one skilled in the art would not interpret claim 1 of the '375 patent, wherein the terms "fixed-program read-only memory" and "read-only memory having a built-in program" are used, to include a program memory that has a write mechanism, even if the write mechanism is not used in the program memory during execution of the program. Furthermore, one skilled in the art would not interpret claim 22 of the '375 patent, wherein the term "a fixed-program microprocessor having a read-only memory means" is used, to include a program memory that has a write mechanism, even if the write mechanism is not used in the program memory during execution of the program.

Accordingly, the court concludes based upon the claim, the specification, and the prosecution history of the '375 patent, and construed as it would be by one skilled in the art, that claim 1 of the '375 patent, wherein the terms "fixed-program read-only memory" and "read-only memory having a built-in program" are used, does not include a program memory that has a write mechanism, even if the write mechanism is not used in the program memory during execution of the program. Likewise, based upon the claim, the specification, and the prosecution history of the '375 patent, and construed as it would be by one skilled in the art, the term "a fixed-program microprocessor having a read-only memory means" in claim 22 of the '375 patent does not include a program memory that has a write mechanism, even if the write mechanism is not used in the program memory during execution of the program.

Therefore, the accused Datapoint hardware-software combinations do not contain the "read-only memory" requirement of '375 claims 1 and 22 and thus do not infringe claims 1, 3, 5, 6, 7, 9, 10, 11, 12, 15, 16, 17, 18, and 22 of the '375 patent.

-2-

Datapoint also argues that its equipment does not infringe '375 claim 1 and its dependencies because the Datapoint equipment does not contain "read-only memory having a built-in program" dedicating the equipment to a functional configuration, as required by '375 claim 1. Datapoint contends that a "built-in" program is a program that is established in the claimed read-only memory at the time of manufacture (*see* Tr. 39:126), and since the Datapoint equipment was volatile read-write memory, no program was or could be established in the memory at manufacture.

NTI attempted to establish that a "built-in" program means a program (1) that is integral to the existence of the invention as a source data entry device, and (2) that gives the invention functions that appear built-in to the operator. (*See* Tr. 17:126-27; 31:158; NTI's Proposed Finding of Fact No. 116). Thus, according to NTI, as long as the program is loaded by whatever means before the operator uses the equipment and the operator does not program the equipment, the program is "built-in." (*See* Tr. 31:158).

The court disagrees with NTI's definition of "built-in." The patent claims, specification, and prosecution history indicate that "built-in" is a term that is tied in with the "read-only memory," each shedding light on the meaning of the other. As noted in the definition of "read-only memory," claim 1 of the '375 patent includes as an element a "fixed-program read-only memory ... said read-only memory having a built-in program dedicating the terminal to a particular functional configuration ...." The '375 specification describes the invention as including:

> a wired or like read-only memory containing a hardwired or otherwise fixed program designed for a particular functional application and dedicating the terminal to that application, wherein the enter [sic] purpose and operation of the machine can be completely revised by substitution of a different read-only memory configuration, containing a different hardwired or fixed program dedicating the terminal to a different function, without the necessity of extensively redesigning or modifying all or most of the operational and control logic.

(PX 1 at col. 2, 1. 11-20). The specification also states that "the hardwired program of the ROM dedicates the entire terminal to a given functional configuration, which may be changed simply by substituting a different ROM with a different hardwired content." *Id.* at col. 4, 1. 35-39.

The patent, as corrected, elsewhere states:

> the hardwired read only memory 38 is a component part of the invention which is of extreme significance and importance to the concept on which the invention is based. That is, not only

> is it important to that concept to have a read- only memory which dedicates the device to a particular operational configuration, but it is also important to embody the read-only memory in a form like that of a wired device, preferably as a plug-in module or series of plug-in circuit boards together comprising such a module. This is so because, while a wired or like ROM of the form just mentioned is unalterable by the operator, it is nonetheless an interchangeable component allowing the machine to be rededicated by changing only the wired-in program of the ROM, i.e., by changing the read-only memory module, under penalty of only modest expense when compared to the conventional approach of designing particular logic and memory capabilities for each different functional application and environment.

Id. at col. 8, l. 5-23.

In the prosecution history of the '375 patent the patent applicants attempted to distinguish certain art by stating that "[t]he claimed device of the present application is rigidly configured, and can be reconfigured, by the *physically-interchangeable* read-only memory," (PX 2 at 51) (emphasis in original), and that the invention could be "reconfigur[ed] ... by physically changing the read-only memory," *id.* at 52.

Based upon the claim, specification, and prosecution history of the '375 patent, the term "built-in program" as used in the patent means a program established in non-volatile memory at the time of manufacture of the memory. Since the patent teaches that memory containing a program be interchangeable from the terminal, the program may be built into an interchangeable memory, it need not be built into the terminal itself.

Accordingly, since it is undisputed that the accused Datapoint equipment uses volatile read-write memory, it follows that Datapoint's accused equipment does not contain "built-in" programs as required by '375 patent claim 1. The accused Datapoint equipment, therefore, does not infringe '375 claims 1, 3, 5, 6, 7, 9, 10, 11, 12, 15, 16, 17, and 18.

-3-

Datapoint next contends that the accused equipment-software combinations do not infringe because they do not use a fixed program for dedicating the equipment to a given configuration as required in claims 1 and 40 of the '375 patent. As the court finds *supra* at § 11(E)(1), it is undisputed that "fixed program" means a program that is not alterable by the operator and that does not alter itself during execution.

As to the first element of the definition of "fixed program," NTI has shown, and Datapoint does not seriously contest, that the accused Datapoint software does not allow for the program operator to alter the program while it is in use. Under the Datapoint software system, data entry programs, termed "*user* programs," can be written by a programmer. Once the program is written and in use on the equipment, however, the operator cannot modify the program.

As to the second element of the definition of "fixed program" concerning program self-modification, Datapoint launches several attacks. Datapoint contends that its programs are not fixed because certain of them use a disk operating system (DOS) interrupt handler that uses overwriting in its execution. The interrupt handler software is described in PX 272 at 45-1 to 45-2. It is undisputed that this DOS interrupt handler is used in foreground processing of cassette driver routines, a DEBUG routine, and a certain delay function in DOS. From the evidence, it appears that the DOS interrupt handler does utilize overwriting and overstoring techniques thus altering itself during execution.

NTI argues, however, that none of the accused software uses the particular DOS interrupt handler. Datapoint counters with assertions of specific instances where the DOS interrupt scheduler is used. Datapoint argues that DATASHARE interpreters use the DOS interrupt handler during system generation because DATASHARE files are released on cassette tapes and the DOS cassette driver is used to enter the files into the system. The court is not persuaded from the evidence that this is correct. Nevertheless, even if it were true, the cassette driver is not used once the DATASHARE files are in place and running on the Datapoint equipment for data entry. The court, therefore, rejects this contention.

Datapoint also contends that DATASHARE interpreters use the DOS interrupt to handle input/output to peripherals. Datapoint's evidence in this regard is not persuasive.

Datapoint asserts correctly that the DOS interrupt handler is available to three interpreters, DF2DOSG, DF11SYS, and DATABUS 15. According to Datapoint, because it is available, then the interpreters are not fixed programs. The court agrees that the DOS interrupt handler is available to DF2DOSG and DF11SYS for programming forms;[97] nevertheless, merely because the DOS interrupt handler is available does not mean it is used.

Datapoint next argues that its software programs are not fixed because the programs use a certain instruction, NOP JUMP, in DP6600 systems. NTI agrees that a NOP JUMP instruction causes a program to modify itself during execution. Nevertheless, NTI has shown that the NOP JUMP instruction cannot be used in most of the accused software, and Datapoint has not shown the contrary. With respect to DATAFORM 18 and certain DATASHARE programs listed in the margin[98] that are not compatible with Datapoint 2200 hardware, NTI argues that NOP JUMP is not used in these programs since the programs require user-written data entry programs and NOP JUMP is a non-user mode instruction. NTI also cites to passages in a DATASHARE manual that the user-written DATASHARE programs are never modified. (*See* PX 299 at 5-1; Tr. 75:200-01). Datapoint attacks NTI's reliance upon the user-written programs, saying that such programs are not executed directly by the computer, but are compiled into object code and then interpreted by an interpreter program for execution. Datapoint asserts that the interpreter, not the user-written program, is the program determining the functional configuration of the equipment and that it should be considered in determining whether the Datapoint equipment has a fixed program. Even assuming this to be true, however, Datapoint has not shown whether the NOP JUMP instruction was used in the interpreters in question. Datapoint raises its "user-written program" argument in a context other than the NOP JUMP instruction context, so Datapoint does not discuss whether NOP JUMP is used in the DATASHARE program interpreter. Even if it were available, it may not have been used. The court, therefore, is unpersuaded that the NOP JUMP was used to make the accused Datapoint software not fixed.

---

[97] The general reference to DOS cited by Datapoint in the DATABUS 15 manual is not persuasive that the interrupt handler is available in DATABUS 15.

[98]
DS3A3360
DS3B3360
DS3A3600
DS3B3800
DS42200
DS42200X
DS35500
DS45500
DS45000
DS55000
DS41170
DS51170
DS46600
DS51800
DS1500
DS5
DS6
DS(RMS)

A third argument that Datapoint raises concerning the fixed program issue is that the Datapoint software may be self-modifying due to unknown bugs in the software or to known but unpreventable bugs. The court determines that this argument is somewhat speculative and is unpersuasive.

Datapoint also claims that NTI, in accusing only software that it considers to be fixed, has excluded software that is self-modifying and essential to using the Datapoint equipment as data entry devices. Datapoint says that the unaccused software was provided to users without restriction and so could make the Datapoint software nonfixed. Datapoint states that NTI has excluded software for field checking and editing and certain form-generating software. Such software, however, does not dedicate the device to a particular functional or operational configuration as defined in the '375 patent; therefore, its exclusion appears to be inconsequential.

Datapoint also notes that NTI has not accused DATASHARE programs using the ACALL feature. ACALL is used to access user-written data entry programs and its use could involve the use of overlays. (Tr. 75:55-58). Although Datapoint has shown that ACALL was available, it has not shown it was used. Thus the court is not persuaded that the Datapoint software was not fixed by reason of the availability of ACALL.

Datapoint next claims that its software is not fixed because it makes extensive use of overlays. Datapoint cites several examples of this. DOS has the capability for using overlays, but it is not apparent that overlays must occur in DOS and any possible use is not adequately explained. Datapoint claims that the DATASHARE interpreters use overlays, but the evidence presented is not sufficiently clear on any details or that overlays must be used.

The evidence indicates that the DF2, DF2E, DF2DOSG, and DF11SYS interpreters may use overlays in user programs and operations and, except in the case of DF2E, for extended interpreter functions such as mathematical operations. These extended interpreter functions do not appear to be necessary for dedicating the Datapoint devices to a particular functional configuration as defined in the '375 patent, and, as with all uses of overlays mentioned here, it does not appear that the overlays must be used.

The evidence shows that overlays are used by the DATABUS 15 interpreter when that interpreter is used on equipment with a 32K memory. (PX 297 at 3-9 to 3-10). Thus DATABUS 15 is not a fixed program when it is used on a 32K memory Datapoint device.

Datapoint also asserts that its programs[99] are not fixed because the programs have variable parameters in the programs so that self-modification of the program occurs. The court has reviewed Datapoint's contentions concerning variable parameters in the DF2, DF2E, DF2DOSG, and DF11SYS interpreters and concludes that the evidence is not persuasive. The contentions as to the DATABUS and DATASHARE interpreters likewise do not appear to be probative on their face.

The final argument set forth by Datapoint on the fixed program issue is that the Datapoint programs mix data and programs so that self-modification takes place. The court has reviewed the evidence and contentions asserted by Datapoint and determines that some of the contentions are unsupported by the evidence, and where there is evidence, it is either not probative or not sufficiently explained to persuade the court that NTI's evidence does not met the preponderance of the evidence standard.

In conclusion, the court finds that the Datapoint software were fixed programs in the sense of the '375 patent except for the DATABUS IS interpreter on 32K memory equipment.

-4-

The court next considers Datapoint's contention that its accused products do not use standard audio tape cassettes.

While it is true that some Datapoint equipment did not use tapes at all and others did not use standard tape, NTI contends that a magnetic disk or diskette is equivalent to a standard audio tape cassette as a mass storage medium in a batch data entry device. To prevail on this contention NTI must show that if disks or diskettes were used in the '375 device in the place of standard audio tape cassettes, the disks or diskettes would perform substantially the same function in substantially the same way to give substantially the same result as did the standard audio tape cassettes. *See Loctite*, 781 F.2d 869. The test of equivalence "encompasses *any* element which one of ordinary skill in the art would perceive as interchangeable with the claimed element." *Thomas & Betts*, 720 F.2d at 1579. (Emphasis in original). The doctrine of equivalents "has been 'judicially devised to do equity' in situations where there is no literal infringement but liability is nevertheless appropriate to prevent what is in essence a pirating of the patentee's invention." *Loctite Corp.*, 781 F.2d at 870 (quoting *Hughes Aircraft Co. v. U.S.*, 771 F.2d 1351, 1361 (Fed. Cir. 1983)).

---

[99] The programs are the DF2, DF2E, DF2DOSG, DF11SYS, DATABUS, and DATASHARE interpreters.

In support of its contention that a magnetic disk or diskette is equivalent to a conventional audio cassette, NTI relies on the testimony of Larky. Larky testified that the conventional audio cassette tapes used in the '375 device were functionally equivalent to a disk or diskette storage medium because all three technologies store data records through magnetic recording and hold that data for later processing. (Tr. 20:73). Larky testified that one of ordinary skill in the art, at the time of the '375 patent filing, would recognize the interchangeability of these three data storage technologies. (Tr. 20:76). Larky defined a person of ordinary skill in the art as a person with an undergraduate degree in electrical engineering and with one or two years experience in data processing. This is essentially the same definition as the one the court adopts *supra* at § II(F) (4) for a person of ordinary skill in the art. (Tr. 20:76-78). Larky recognized that diskette technology developed after the '375 patent filing, but he testified that those skilled in the art at the time of the diskette's invention would recognize the diskettes as interchangeable with standard audio cassette tapes for computer data storage. (Tr. 20:79-80). Larky further testified that, in the general time frame from the filing of the '375 patent to the invention of diskettes, those skilled in the art frequently encountered tapes and disks used interchangeably for data storage in the same processor. (Tr. 20:78). Datapoint never attempted to refute this testimony.

Based upon Larky's testimony and the other evidence presented at trial, the court agrees that a magnetic disk or diskette is equivalent to a standard audio tape cassette as a mass data storage medium in a batch data entry device. The court holds that, in the context of the '375 device, magnetic disks, diskettes, and standard audio tape cassettes could perform the same function in substantially the same way to give substantially the same result.[100] The court further holds that one of ordinary skill in the art would perceive magnetic disks and diskettes as interchangeable with standard audio tape cassettes as a mass data storage medium in the '375 device. It would be inequitable to hold that Datapoint devices do not infringe the '375 patent simply because they use magnetic disks and diskettes rather than standard audio tape cassettes.

The court further holds that, as a mass data storage medium, the modified audio cassette tapes that Datapoint contends it used in all Datapoint cassette tape devices (*see* Datapoint's Response to NTI's Post Trial Argument and Findings of Fact at p. 272) were equivalent to the standard audio tape cassette claimed in the '375 patent. If the modified audio cassette tapes (which conformed to the European Computer Manufacture standards and the International Standard Organization standards and had lubricated corner rollers and anti-static, non-contaminating shims) which Datapoint claims it used in its devices were used in the '375 device in the place of the standard audio tape cassettes as a mass data storage medium, the Datapoint modified audio cassette tapes would "perform substantially the same function in substantially the same way to give substantially the same result" as did the standard audio tape cassettes. *See* Loctite, 781 F.2d 869. The court holds that one skilled in the art would perceive the modified Datapoint cassette tape and a standard audio tape cassette as interchangeable as mass data storage devices in the '375 invention. This holding is specifically supported by the trial testimony of Marino. (Tr. 56:166).

---

[100] The court does not vary from its finding, *supra* at § II(C) (3), that Sycor did not intend standard audio tape as the best mode of recording digital information. Best mode involves a concealment concept, that is, whether Sycor concealed from the PTO the best mode of practicing the claimed invention. *See Application of Sherwood*, 613 F.2d at 816. The equivalency doctrine inquires whether another device is the equivalent of the claimed invention. For equivalency analysis the court compares the claimed invention and the accused device, not the concealed best mode and the accused device. The court therefore need not determine whether disk and diskettes are equivalent to the tape Sycor actually considered the best mode of practicing the invention.

In Datapoint's proposed conclusion of law 32, it contends that the term "cassette recorder/reproducer" means a conventional unmodified audio tape cassette recorder and that NTI is estopped from expanding the scope of the claims of the '375 patent through application of the doctrine of equivalents. Although this proposed conclusion of law is not mentioned in Datapoint's briefing, the court understands Datapoint to contend that NTI is estopped by the doctrine of prosecution history estoppel to rely on the doctrine of equivalents to expand the scope of the '375 patent's cassette tape claims.

Prosecution history estoppel "is 'an equitable tool for determining the permissible scope of patent claims' as against a specific structure accused of infringement." *Mannesmann Demag Corp. v. Engineered Metal Products Co., Inc.*, 793 F.2d 1279, 1284 (Fed. Cir. 1986) (quoting *Builders Concrete, Inc. v. Bremerton Concrete Products Co.*, 757 F.2d 255, 257 (Fed. Cir. 1985)). Prosecution history estoppel bars the patentee from construing its patent claims to "resurrect subject matter previously surrendered during prosecution of the patent application." *Mannesmann*, 793 F.2d at 1284. The estoppel applies to both amendments of the patent claims to overcome prior art rejections and to arguments the patent prosecutor submits to the PTO to obtain the patent. *Hughes Aircraft*, 717 F.2d at 1361. In deciding the estoppel issue, the court is to look at the "nature and purpose" of the patentee's action to see what, if any, limiting effect the patentee's action warrants. *Id.* at 1363. In cases where the patentee's action was not in response to an examiner's rejection or was not critical to allowance of the claims, courts have not found estoppel to arise. *Id, e.g., Great Northern Corp. v. Davis Core & Pad Co., Inc.*, 782 F.2d 159, 166 (Fed. Cir. 1986); *Datascope Corp. v. SMEC, Inc.*, 776 F.2d 320, 325 (Fed. Cir. 1985).

As discussed *supra* at § II(A)(1), the patent claims and specification clearly provide that the '375 device uses conventional audio tape cassettes. In support of its estoppel argument, Datapoint cites only the following statements made by Sycor during the '375 patent prosecution:

> 1) The tape cassettes 18 are illustrated in more detail in Fig. 4, from which it will be apparent that these components are of the type which are *almost universally available for audio purposes, comprising a flat, compact, basically rectangular case or housing (conventionally of plastic) enclosing several hundred feet of magnetic recording tape which is nominally 0.15 inches wide.* (Pl. Ex. No. 2, p. 6).
>
> 2) The cassette recorders, as mentioned previously, *may comprise essentially [operative] conventional tape decks* designed to accept the cassette magazines. (Pl. Ex. No. 2, p. 13).
>
> 3) It is the position of the applicant that the patentable aspects of this invention reside primarily in the concept of using a fixed-program hard-wired read-only memory to totally control and dedicate the functional configuration of a video display data entry terminal, *together with the use in such a terminal of the magnetic tape cassettes which have become so familiar in the audio entertainment field.* These are the concepts set forth in the claims, and It is also these concepts which are totally absent from the prior art (Amendment 1/18/71) (Pl. Ex. No. 2, p. 49). (Emphasis added).

The examiner never made any objections concerning the audio tape cassettes. The use of conventional cassette tapes never became a critical issue in the PTO's decision to Issue the patent.[101] These facts militate against finding estoppel. *Mannesmann*, 793 F.2d at 1285.

The court holds that, while these three statements do indicate the importance of using conventional tapes in the '375 device, they do not constitute "surrender" of patent protection for modified cassette tapes, disks, and diskettes. The statements do not mention these three alternate magnetic recording technologies. The "nature and purpose" of the statements is to emphasize the value of the '375 invention, and not to surrender or distinguish the '375 invention from modified cassette tapes, disks, or diskettes. It would be inequitable and unwarranted to hold that these statements estop NTI from claiming the general protection of the doctrine of patent equivalency.

---

[101] The fact that the use of conventional audiotape cassettes was never a critical issue in the PTO's decision to issue the '375 patent is not inconsistent with the court's holding *supra* at § II(C) (3) that Sycor misrepresented the best mode for recording digital information. Here, the court simply finds that the PTO never questioned Sycor's use of conventional cassette tapes or made issuance of the '375 patent contingent upon use of conventional cassette tapes. Sycor was never required to surrender equivalent technology in order to obtain issuance of the patent.

-5-

Datapoint next contends Its products do not infringe the '375 patent because they do not contain the "control logic" claimed in the patent. Datapoint contends that the provision in claim 1 of a central logic unit embodying "substantially all" control logic for the '375 device is impossible to interpret.

The court, in the inequitable conduct context, *supra* at § II(A)(13), has already addressed this issue. There, the court defined the term "control logic" as used in the patent *not* to mean the logic which actually operates the peripherals, but instead to mean the logic which instructs the peripherals to function at a given point in time in accordance with the particular peripheral's pre-established capability.

Datapoint contends that many of the control functions that the preferred embodiment of the '375 patent performs in the central logic unit are performed in the peripheral logic units in the Datapoint equipment. Datapoint apparently contends here that because it had more control logic in the peripherals of its devices, it does not infringe the '375 patent. Because Datapoint completely fails adequately to support this contention, the court is unable to conclude that NTI has failed to carry its burden of proof.

-6-

Datapoint contends that its products do not infringe the '375 patent because NTI defines the '375 patent device as only a batch source data entry device dedicated to off-line capture and preparation of data for batch processing while the Datapoint equipment is able to locally process data as it is entered. Datapoint contends that the ability of Datapoint products to process data as it is entered is an important feature of the Datapoint devices which distinguish the Datapoint devices from the '375 patent. The court agrees that the Datapoint devices do have added features which make them resemble general purpose computers, but the court holds that these added features do not defeat NTI's infringement claims. A defendant's simple addition of functions to his device will not defeat an otherwise valid infringement action. *Amstar Co. v. Envirotech Corp.*, 730 F.2d 1476, 1482 (Fed. Cir.), *cert. denied*, 469 U.S. 924 (1984). "Adding features to an accused device will not result in noninfringement if all the limitations in the claims, or equivalents thereof, are present in the accused device." *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1057 (Fed. Cir. 1988), *cert. filed*; *Texas Instruments*, 805 F.2d at 1563. That the Datapoint devices had added features that allowed the Datapoint devices to process data as it was entered will not defeat NTI's infringement claims.

V.

ATTORNEY'S FEES

Datapoint contends it should recover reasonable attorney's fees spent in defense of this suit. "The court *in exceptional cases* may award reasonable attorney's fees to the prevailing party." 35 U.S.C. § 285. (Emphasis added). Because Datapoint is the prevailing party, the sole question presented is whether under the statute this suit constitutes an exceptional case. In order to avoid penalizing a party for merely defending or prosecuting a patent suit, the court should not routinely assess attorney's fees against the losing party. The court instead should award attorney's fees "to avoid a gross injustice." *Revlon, Inc. v. Carson Products Co.*, 803 F.2d 676, 679 (Fed. Cir.), *cert. denied*, ___ U.S. ___, 107 S.Ct. 671 (1986). Circumstances justifying a court's holding a case to be exceptional under 35 U.S.C. § 285 include, *inter alia*, inequitable conduct during prosecution of a patent, misconduct during litigation, vexatious or unjustified litigation, a frivolous suit, *Bayer Aktienaesellschaft v. Duphar Research B.V.*, 738 F.2d 1237, 1242 (Fed. Cir. 1984), bad faith, fraud, malice, harassing tactics, and other similar concepts, *Rolls-Royce, Ltd. v. GTE Valeron Corp.*, 800 F.2d 1101, 1111 (Fed. Cir. 1986).

In its requested findings of fact Datapoint contends this case is exceptional, first, because NTI asserted obviously invalid claims under the '375 patent and, second, because Sycor committed inequitable conduct and fraud on the patent office during prosecution of the '375 patent. In its brief, Datapoint does not flesh out or even mention these requested findings. Because Datapoint has not specifically pointed out which NTI claims were "obviously invalid" and because the court on its own review knows of no such "obviously invalid" claims by NTI, the court rejects Datapoint's first contention.

Concerning Datapoint's second contention, the court agrees that Sycor committed inequitable conduct during the prosecution of the '375 patent, but the court holds that Sycor's inequitable conduct does not makes this an exceptional case.

Moreover, Datapoint's defense of the case and prosecution of its counterclaim, while successful, was so broad-based and blunderbuss, with so many arguments rejected, that it would be extremely difficult, and inequitable to NTI, to attempt to calculate an appropriate attorney's fee. Datapoint has failed to carry its burden on this issue, and the court denies the requested relief.

VI.
SUMMARY

To summarize, the court finds and concludes: the '375 patent is unenforceable by reason of Sycor's inequitable conduct pertaining to the Rule 312 amendments (§ II(A)(8)); claims 19 and 24 (and their dependencies) of the patent are invalid because Sycor concealed the best mode for recording digital information (§ II(C)(3)); and claims 1, 19, 29, and 40 (and their dependencies) of the patent are invalid because Sycor inadequately disclosed the program of the device, rendering the patent non-enabling (§ II(D)). Claims 29, 30, and 31 of the patent are invalid because they are anticipated by the prior art. Claims 24, 29-33, and 38-39 of the patent are invalid because they are made obvious by the prior art. The Datapoint accused hardware-software combinations infringe (literally or under the doctrine of equivalents) claims 14, 19, 20, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, and 44. The DATABUS interpreter on 32K memory equipment does not infringe claim 40 (and its dependencies). The court holds that NTI's suit is not barred by laches and that Datapoint is not entitled to recover attorney's fees.

August 31 , 1988.

SIDNEY A. FITZWATER
UNITED STATES DISTRICT JUDGE

Supreme Court, U.S.
FILED
SEP 19 1990
JOSEPH F. SPANIOL, JR.
CLERK

③

No. 90-326

IN THE

Supreme Court Of The United States

OCTOBER TERM, 1989

DATAPOINT CORPORATION,
Petitioner,

v.

NORTHERN TELECOM INC.,
Respondent.

On Petition For Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF IN OPPOSITION OF RESPONDENT NORTHERN TELECOM INC. TO PETITION FOR WRIT OF CERTIORARI

Donald R. Dunner
Finnegan, Henderson, Farabow,
Garrett & Dunner
1300 I Street, N.W.
Washington, D.C. 20005
(202) 408-4000
Counsel for Respondent

Of Counsel:
J. Michael Jakes
Griffith B. Price, Jr.
William H. Pratt
Finnegan, Henderson, Farabow,
Garrett & Dunner
1300 I Street, N.W.
Washington, D.C. 20005
(202) 408-4000

BEST AVAILABLE COPY

QUESTION PRESENTED

Petitioner's statement of the questions presented attempts to create issues of importance and to manufacture conflicts with the Federal Rules of Civil Procedure and Supreme Court precedent where none exists.

Restated, the question presented is nothing more than whether the Federal Circuit properly reversed the district court's holding that certain claims of U.S. Patent No. 3,760,375 ('375 patent) were invalid for lack of "enablement" under 35 U.S.C. § 112, where the expert testimony, including the testimony of Datapoint's own witnesses, supported a conclusion of validity under the statute.

RULE 29.1 STATEMENT

Respondent Northern Telecom Inc. is a wholly owned subsidiary of Northern Telecom Limited, a corporation incorporated under the laws of Canada having its principal offices at 3 Robert Speck Parkway, Mississauga, Ontario, Canada L4Z 3C8.

Northern Telecom Inc. has the following subsidiaries (other than wholly owned subsidiaries):

NYNEX Meridian Systems
6 Century Drive
Second Floor
Parsippany, NJ 07054

(80% owned by Northern Telecom Inc.)

Sanko Telecom Co., Ltd.
Kokasai Shin-Akasaka Building
1-20 Akasaka 6-Chome
Minato-ku, Tokyo 107
JAPAN

(20% owned by Northern Telecom Inc.)

Sumisho Electronics Co. Ltd.
3-11 Kanda Nishiki-cho
Chiyoda-ku, Tokyo 101
JAPAN

(19% owned by Northern Telecom Inc.)

TABLE OF CONTENTS

Page

QUESTION PRESENTED i

RULE 29.1 STATEMENT ii

TABLE OF AUTHORITIES iv

REASONS FOR DENYING THE WRIT 1

CONCLUSION 5

TABLE OF AUTHORITIES

CASES: **Page**

In re Brandstadter, 484 F.2d 1395 (C.C.P.A. 1973) . . . 4

Dennison Mfg. Co. v. Panduit Corp., 475 U.S. 809 (1986), *on remand*, 810 F.2d 1561 (Fed. Cir. 1986), *cert. denied*, 481 U.S. 1052 (1987) 2

Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452 (Fed. Cir. 1984) . . 3

In re Sherwood, 613 F.2d 809 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981) 3

Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524 (Fed. Cir.), *cert. denied*, 484 U.S. 809 (1987) . . . 4

STATUTES AND RULES:

35 U.S.C. § 112 . . . . *passim*

Fed. R. Civ. P. Rule 52(a) 1, 2

No. 90-326

IN THE

Supreme Court Of The United States

OCTOBER TERM, 1989

DATAPOINT CORPORATION,

Petitioner,

v.

NORTHERN TELECOM INC.,

Respondent.

On Petition For Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF IN OPPOSITION OF RESPONDENT NORTHERN TELECOM INC. TO PETITION FOR WRIT OF CERTIORARI

REASONS FOR DENYING THE WRIT

This case presents no issue worthy of review by the Supreme Court. Specifically, the decision in this case does not conflict with the decision of another court, involves no constitutional questions, and presents no important questions of federal law that must be settled by this Court. Instead, the petition of Datapoint Corporation (Datapoint) contains nothing more than the familiar refrain of a losing litigant on appeal.

Datapoint's petition seeks to create a basis for exercise of the Supreme Court's jurisdiction by alleging that the Court of Appeals for the Federal Circuit failed to adhere to the "clearly erroneous" standard of Rule 52(a), Fed. R. Civ. P., and certain precedents of this Court. By now, the Court should easily recognize this tactic of losing litigants in the Federal Circuit who have no real grounds for requesting

Supreme Court review.

The creation of the Federal Circuit in 1982 removed a primary ground for Supreme Court review, namely conflicting precedent between circuits in the area of substantive patent law. As a result, losing litigants in the Federal Circuit have unsuccessfully tried to use Rule 52(a) as a way to obtain review. Datapoint itself cites several such unsuccessful attempts in 1987. (Datapoint Petition, at p. 9, n.13).[1]

Rather than showing the Federal Circuit's "well-known predilection for fact finding" as Datapoint asserts (Datapoint Petition, at p. 9), it shows only that the Supreme Court has previously rejected similar allegations as being insufficient grounds for granting review. Thus, Datapoint's assertion that "this Court has not previously considered a Federal Circuit opinion to assess that appellate court's role in reviewing findings permeated with determinations of credibility" (Datapoint Petition, at p. 9) is only half true. It is true that the Court has not issued a writ of certiorari based on such grounds, but it is also true that such grounds have often been considered and rejected by the Court as being unworthy of review.

The principal thrust of Datapoint's petition is that the Federal Circuit erroneously substituted its view of factual findings and ignored the district court's crucial findings based on the credibility of witnesses. These contentions are completely without merit. Indeed, the Federal Circuit denied Datapoint's Petition for Rehearing and Suggestion for Rehearing In Banc on the very same grounds.

Datapoint ignores the portion of the Federal Circuit's opinion which states that "the great weight of the expert testimony *on both sides*" supports the legal conclusion that U.S. Patent No. 3,760,375 ('375 patent) was fully enabling under 35 U.S.C. § 112.[2] (Opinion, at p. 18a; emphasis added). Thus, the Federal Circuit did not have to pick and choose between expert testimony because virtually every expert witness, including Datapoint's own experts, testified in such a way as to support a conclusion of patent validity.

---

[1] In *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1986), the Court granted a petition for certiorari and vacated (not reversed) the Federal Circuit's decision for further consideration in light of Rule 52(a). On remand, the Federal Circuit reaffirmed its previous decision, *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986), and the Supreme Court denied review, 481 U.S. 1052 (1987).

[2] 35 U.S.C. § 112, first paragraph, provides in relevant part that:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear,

(Footnote Con't)

Datapoint criticizes the Federal Circuit for relying on the testimony of three witnesses, namely Gordon Bell, Earle Pughe, and Fernando Corbato, who were not specifically mentioned as being credible witnesses by the district court in connection with its conclusion on enablement under § 112. (Datapoint Petition, at p. 8). Each of these witnesses testified that it would be relatively straightforward for a skilled computer programmer to carry out the claimed invention.[3] (Opinion, at p. 17a). What Datapoint omits from this discussion, however, is that *Bell, Pughe, and Corbato were all Datapoint witnesses.*

Even the testimony of Datapoint's expert witness Dr. Kay Magleby, who the district court found "persuasive and credible," supports a conclusion that the '375 patent specification was fully enabling to one of ordinary skill in the art. The testimony of Datapoint's other witness, Prof. Wesley Clark, was discounted by the Federal Circuit, not as a matter of credibility, but for its inconsistency with binding precedent interpreting the statutory requirements of § 112 as applied to computer programs. *See In re Sherwood*, 613 F.2d

---

> concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same ....

[3] Datapoint accuses the Federal Circuit of "openly enag[ing] in unwarranted fact finding" because the court cited Bell's deposition testimony rather than his trial testimony. (Datapoint Petition, at p. 8). As Datapoint points out, Bell changed his position at trial because he had not considered the memory constraints of the patent during his deposition. (*Id.*)

What the Federal Circuit realized, however, is that Bell's later trial testimony concerning the size of the memory is irrelevant to the enablement issue. The proper question under § 112 is whether the patent disclosure is sufficient to enable those skilled in the art to practice the *claimed* invention. *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463 (Fed. Cir. 1984). The size of the memory is not recited in the claims. Therefore, Bell's later testimony regarding an ordinary programmer operating under "intense memory constraints" was correctly disregarded by the Federal Circuit as being directed to the wrong legal standard.

809, 817 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981). Completely absent from Prof. Clark's testimony was any evidence of the *amount* of experimentation required to practice the claimed invention.

Furthermore, Datapoint fails to reconcile its position on the credibility of witnesses with the fact that enablement under § 112 is a *question of law*. *See, e.g.*, *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir.), *cert. denied*, 484 U.S. 809 (1987). Because enablement is a question of law, expert opinions on that ultimate legal question are not determinative. *See In re Brandstadter*, 484 F.2d 1395, 1405 (C.C.P.A. 1973) (rejecting legal opinion on ultimate question of enablement).

Thus, there is more to the enablement issue, as with all legal issues, than merely judging the credibility of witnesses as Datapoint suggests. Otherwise, a district court could effectively insulate itself from appellate review by simply relying on the credibility of witnesses in reaching its legal conclusion. This would prevent the Federal Circuit from reversing in a case such as this where, credible witnesses or not, Datapoint had failed to show that the '375 patent did not meet the statutory requirements of enablement under § 112.

By filing a petition for certiorari on such flimsy grounds, where it knows that the Court has previously denied certiorari for similar reasons, Datapoint has trivialized the entire process of seeking Supreme Court review. When considered with Datapoint's efforts to recall the Federal Circuit's mandate in this case while it seeks review in this Court,[4] it is apparent that Datapoint's petition is nothing more than a thinly disguised attempt to postpone the proceedings on remand in the district court.

Accordingly, because this case presents no reviewable issue for the Supreme Court, the petition for certiorari should be denied.

---

[4] Datapoint has filed a motion in the Federal Circuit to recall the court's mandate in the mistaken belief that a petition for certiorari filed within seven days after rehearing is denied, but before the mandate issues, will automatically stay the mandate. Respondent Northern Telecom Inc. has opposed this motion.

CONCLUSION

For the foregoing reasons, the petition for certiorari should be denied.

Respectfully submitted,

Donald R. Dunner
Finnegan, Henderson, Farabow,
Garrett & Dunner
1300 I Street, N.W.
Washington, D.C. 20005
(202) 408-4000

Counsel for Respondent

Of Counsel:

J. Michael Jakes
Griffith B. Price, Jr.
William H. Pratt
Finnegan, Henderson, Farabow,
Garrett & Dunner
1300 I Street, N.W.
Washington, D.C. 20005
(202) 408-4000